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## NEWS SUMMARY

GENERAL BUSINESS

### Poles cheer new Pope

John Paul II was formally installed yesterday as leader of the world's 700m Roman Catholics. He becomes the first non-Italian pontiff for more than 50 years.

A vociferous contingent of Poles, many of them in national costume, watched the ceremony at St. Peter's Square in Rome. The inaugural mass in the square was attended by more than 200,000 people, including about 120 foreign delegations.

Among them was Dr. Donald Jagan, Archbishop of Canterbury, who is the first leader of the Anglican community to attend such a ceremony.

During his address, the new Pope urged his followers to work to open up the frontiers of states, economic and political systems, and the vast fields of culture, civilisation and development.

### Portugal move

resident Ramalho Eanes is expected to name a new Portuguese Prime Minister in an attempt to settle the two-month-old government crisis and avert early elections.

### Steel-users' price move

UK STEEL-USERs are no longer prepared to pay EEC minimum prices for steel, while price-cutting is widespread in the EEC, which scrupulously maintains prices at levels set down by the EEC. Davignon plan, is finding its position as supplier of over half the UK steel requirements increasingly eroded by cheap imports.

### Two-tier plan

The official Ulster Unionist Party is to press for establishment of regional council in Ulster to act as an upper tier to the present local government system.

### Floods request

India's West Bengal state has sought aid worth £300m from central government to help rehabilitate 15m people affected by the recent floods.

### Sign of Times

leaders of The Times are the adon's top drinkers, says a new survey. The Rev. G. Thompson backs. He claims that the paper has 864 per cent of its readers take alcohol and more than 25 per cent have a drink every day.

### briefly...

the pumping operation to move crude oil from the ripped Greek tanker Christina is completed. Page 4

strid Lingner, Swedish author of the Pippi Longstocking children's books, has won the West German book trade's peace prize.

rolling Stone Keith Richards goes on trial in Toronto today on drugs charges.

Whitehall has launched special "kill a bug" courses for hospital staff fighting pests immune to normal pesticides.

few Delhi slum-dwellers invaded the government-owned Ashoka hotel and made speeches against luxury living and wasteful government spending.

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## PEACE PLAN GOES TO EGYPT AND ISRAEL FOR APPROVAL

# Mideast treaty breakthrough

BY DAVID BUCHAN, WASHINGTON, Oct. 22

A DRAFT peace treaty, covering all main issues in dispute, has been referred back to the Egyptian and Israeli Governments for final approval, the State Department announced today after ten days of negotiations between Ministers of both countries here.

The surprise breakthrough, which followed gloomy prognostications late last week, was credited by both Egyptian and Israeli officials to President Carter, who intervened personally in the talks three times. It was the U.S. that at the start of the talks produced a draft treaty and then an amended version last week.

No date has been tentatively set for signing the treaty, which will be closely scrutinised in Cairo and Jerusalem. The State Department spokesman said.

The Washington peace talks are due to resume in two or three days' time, largely to thrash out details still in dispute in the three annexes to be attached to the treaty.

Egyptian and Israeli oil

that the terms of an Egyptian-Israeli peace treaty should be implemented within two to three years of its signature.

Egyptian officials here have given the firm impression—once supported by the State Department—that the draft treaty is in its final form. Israeli sources warn, however, that their Cabinet in Jerusalem might want to make certain changes before ratifying it.

The oil talks that will open here this week will centre on how much oil Egypt is willing to sell Israel from the Sinai oilfields. These were developed almost from scratch by the Israelis during their four-year occupation of the area and Israel is anxious to recoup some of its investment through some assurance of continued supplies.

Israel is heavily dependent for its oil imports on the non-Arab states of Iran.

The President made it clear at the start of the Egyptian-Israeli talks that a peace treaty would only be a first step towards an overall Middle East settlement between Israel and all of its Arab neighbours. This would include progress on the West Bank and the Gaza Strip, where the Israeli undertaking to allow Palestinians limited autonomy for a five-year transitional period, had almost no Arab support outside Egypt.

American appeals to Jordan and Palestinians to join in talks on the West Bank have so far failed to win their participation. U.S. officials say that, even with an Egyptian-Israeli peace treaty almost in the bag, the hardest obstacles to an overall settlement still lie ahead.

David Lennow writes from Tel Aviv: The leaders of the Israeli delegation to the Washington peace talks with Egypt arrived home today with the draft peace treaty which they will present to the Cabinet for approval tomorrow night.

Both Mr. Moshe Dayan, the Foreign Minister, and Mr. Ezer Weizman, the Defence Minister, were optimistic on their arrival that substantial progress had been made in the negotiations

and that an agreement could be reached soon. They ascribed this to the mediation by Mr. Carter.

The main concern of the Cabinet when it meets tomorrow, and possibly on Tuesday, will be the linkage, if any, between the treaty and negotiations on the Gaza Strip and the West Bank-Palestine issue.

A number of Ministers are opposed to any linkage, however loose. Some members of the National Religious Party, the second largest in the coalition, have threatened to resign if implementation is made dependent on progress toward a solution of the West Bank-Palestine issue.

The Israeli Ministers were recalled from Washington after a Cabinet meeting on Friday which ruled that a first-hand report was needed to enable the Government to decide its stance on the unresolved issues.

Mr. Dayan expressed considerable optimism on his arrival in Israel, and said that the sides had drawn closer, thanks to Mr. Carter's intervention. Mr. Weiz-

## Nkomo condemns talks in attack on Smith

BY MICHAEL HOLMAN

LUSAKA, Oct. 22

PROSPECTS for an all-party Rhodesian conference were washed by guerrilla leader Mr. Joshua Nkomo today when, for the second time in two days, he denounced it and delivered his most bitter attack to date on Mr. Ian Smith.

It is thought unlikely that Mr. Nkomo would have taken such a stance without the knowledge and consent of President Kenneth Kaunda of Zambia, who has met Mr. Nkomo at least once since the Rhodesian raids against Mr. Nkomo's troops in Zambia began last Thursday.

At a press conference here yesterday, Mr. Nkomo promised to "shoot it out" with the only language we can talk to them. "Today he described Mr. Smith as 'a beast, a brute, a criminal, a thief'."

He said: "The only talking we shall have for Britain has had our country unconditionally."

He did not unequivocally refuse to countenance the prospect of Mr. Smith and the other internal leaders attending a conference as members of the British delegation, but he device canvassed before, but there appears little likelihood that Mr. Smith would accept this.

It remains difficult for journalists in Johannesburg to visit the raids and the TUC came from Mr. Nkomo's nine planes which Mr. Nkomo says were shot down, to piece together an accurate account of the Rhodesian attacks.

Unconfirmed reports suggest there have been further attacks in the Siavonga area near the eastern end of Lake Kariba.

There is mounting evidence that the Zimbabwe African People's Union centre 12 miles from Lusaka, bombed on Thursday morning, was a non-combatant camp. At today's conference Mr. Nkomo dismissed Rhodesian claims of massive guerrilla casualties at this and other camps.

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## U.K. decision on European monetary system delayed

BY PETER RIDDELL, ECONOMICS CORRESPONDENT

THE GOVERNMENT may not be able to reach a final decision on whether the UK should join the proposed European Monetary System until just before the key summit of EEC Government heads in Brussels in early December.

This delay has become likely in view of the long, drawn-out talks between Finance Ministers. There are still major differences within the EEC on key issues about how the system would operate. These will not be resolved at least until the next meeting of Finance Ministers on November 20.

A later decision would also suit Mr. James Callaghan, who has wanted to avoid committing himself in principle for as long as possible because of the divisions within the Labour Party and the Cabinet.

These will be highlighted today when the Prime Minister faces opposition to UK participation at a joint meeting of the Cabinet and the Labour Party national executive committee.

Anti-marketisers, who dominate the national executive, expressed their hostility to the scheme in an emergency resolution to the Labour Party Conference earlier this month, but it was not debated.

The Prime Minister also faces opposition within his own Government. He blocked an attempt by anti-EEC Ministers to raise the issue at a full Cabinet meeting earlier this month. There are possibly decisive political pressures when Parliament reassembles next month, since a Commons debate has been promised and Ministers and officials are

## Biggest attack

Editorial comment in the Zambia Press has called for national unity and restraint.

Mr. Kaunda will break his four-day silence tomorrow with a Press conference, preceded by a briefing for the Diplomatic Corps.

Tony Hawkins writes from Salisbury: Rhodesian officials were confident today that the raids and the TUC came from Mr. Nkomo's nine planes which Mr. Nkomo says were shot down, to piece together an accurate account of the Rhodesian attacks.

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## Power workers say 'no chance' of 5% limit in new pay claim

BY CHRISTIAN TYLER, LABOUR EDITOR

SHOP STEWARDS of electricity supply workers set out their pay demands yesterday, warning that there was "no chance" of the Government's 5 per cent limit being acceptable.

The claim, agreed by 54 stewards in Doncaster, an official. But it is a reminder that the Government may face opposition to its policy from power workers, as well as the miners, who are claiming 40 per cent and the local authority managements who will have their 40 per cent demand rejected next week.

The attempt to forestall a clash with these powerful groups will resume tomorrow when TUC leaders meet Ministers again for talks about a new "understanding" that might replace strict application of the 5 per cent limit.

Although Ministers are anxious to secure that agreement, it is possible before the Queen's Speech early next month, there has been little sign yet of any TUC concession that would be large enough to permit the Government to switch the emphasis of its attack on inflation away from pay and on to prices.

However, last night Mr. Terry Duffy, incoming president of the Engineering Union and one of the six TUC leaders involved, said he was confident that a formula could be found.

"If we can get concrete assurances from the Government—as I think we will—move away from the rigidity of the 5 per cent and put the emphasis on prices, then we can find some formula to stop inflation shooting up again."

He said the TUC should undertake to make recommendations on pay as its part of the bargain. The same appeal for a lead from the TUC came from Mr. Frank Chapple, of the Electricity Workers' Union. He predicted that if the 5 per cent was offered to his power worker members there would be "outbreaks of trouble."

However, if the policy held—especially with public service workers—there were many in the TUC who were saying they would accept it too.

The unofficial shop stewards committee is asking for a "substantial increase" in basic rates from March, a 35-hour week, optional retirement at 60, and concessionary electricity. The official claim on behalf of the 90,000 workers is not expected to go in till after Christmas.

A spokesman for the stewards said: "We are making no threats about power cuts this winter at this stage. However, we would have no alternative to recommending industrial action if we do not get a decent increase. No way are we going to accept 5 per cent."

Mr. David Bassett, of the General and Municipal Workers' Union, and another of the six who will be at Tuesday's meeting with Ministers, yesterday developed the other strand of the alternative strategy that the TUC is demanding of the Government.

He said the TUC should press for changes in the law to help the low-paid following the Government's refusal to intervene in wage council settlements that had left workers below the Government's own low pay criterion.

## Sony allowed to join CBI

BY JOHN ELLIOTT, INDUSTRIAL EDITOR

SONY UK, the Japanese-owned television manufacturer, has been admitted as a member of the Confederation of British Industry after a period of exclusion from industry's main representative bodies.

It is the first large Japanese-owned company to join the CBI and its admission could prove something of a watershed in the relationships between the Japanese and other big companies and institutions in Britain.

"We see membership of the CBI as a sign of recognition that we are part of British industry," Mr. Eric Bean, a senior executive of the company, said last night.

"Now we must show that we are also fully paid-up members of the UK electronics industry as well."

The first chance for the company to test reaction to its ambitions will come in two weeks' time, when Mr. Bean, with Mr. Bill Fulton, Sony UK's managing director, attend the confederation's annual conference in Brighton. Mr. Fulton, who is British, replaced a Japanese managing director two months ago.

Sony has a factory making television sets in South Wales, where several Japanese companies have set up establishments. It emphasises that its products include a substantial proportion of UK-made components and that it employs about 1,000 people in Britain.

Since it arrived in 1974, it has found it difficult to gain acceptance, especially as trade battles with Japan have increased. It does, however, belong to the London and Cardiff Chambers of Commerce.

Agonising at CBI headquarters over what to do about its membership application, but some consider it an advantage to be Continued on Back Page CBI jobs debate, Page 4

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## OVERSEAS NEWS

## Iran refinery strike ends after talks with oil chief

By Andrew Whitely

TEHRAN, Oct. 22

THE NATIONAL Iranian Oil Company's chairman, Mr. Houshang Ansari, today successfully intervened in a strike which threatened to shut down production at the world's largest oil refinery, at Abadan.

A company official said the week-long strike had been called off and most workers had gone back to work.

A three-day strike by workers at a nuclear power plant near Bushehr was also reported ended.

The Abadan employees, back on strike for the second time in the present wave of industrial unrest, had demanded pay increases averaging 50 per cent and an end to harassment by security agents. They apparently agreed to return after promises from Mr. Ansari that their demands would be met.

Last night thousands of NIOC petrol pump attendants stopped work, stranding hundreds of drivers.

A two-week strike by customs

officials, which has held up most international trade, and blocked Iran's land and sea entry points, was reported to have ended yesterday.

But action by postal workers in several parts of Iran today, in Khamadan, west of Tehran, fierce clashes with police and troops continued for the second day. Unconfirmed reports said that up to 10 people died in the shooting.

Demonstrations were held in Mashad, Isfahan, and Zanjan. Elsewhere, two people were reported killed in separate incidents.

Some 2,000 students attended today's demonstration at Aryamehr University.

Meanwhile, the Government appears to be taking steps to initiate a dialogue with the Shah's most implacable opponent, the exiled religious leader, Ayatollah Khomeini, now living

in Paris.

One of the Shah's closest aides, the Iranian Ambassador to Washington, Mr. Ardeshir Zahedi, today left Tehran for a 48-hour visit to Paris.

Two leading Iranian dissidents known to be close to Khomeini and to the moderate religious leadership in Iran have also left for Paris to attempt to see him.

In an interview on independent television's "Weekend World," Dr. David Owen, the British Foreign Secretary, said the Government considers that keeping the Shah of Iran in power to protect Western interests is much more important than its concern over human rights abuses in Iran.

If the Shah was toppled, he said, it would be by a very right-wing government that would very soon be disrupted by the Left—and the Left is really Communism, the Soviet Union and terrorist-type groupings.

## U.S. probe into steel dumping

By STEWART FLEMING

NEW YORK, Oct. 22

THE U.S. Treasury has launched its first steel dumping investigation based on information collected on the trigger price system which came into effect in May.

The probe reflects a hardening of the Treasury's stand against illegally dumped foreign steel. A spokesman said that the cases which are now being investigated involving three companies in Spain, Taiwan and Poland, are only the first of a series which are now "in the works."

Steel industry leaders who have been complaining bitterly that steel imports this year are threatening to top 20 million tons compared with around 18 million last year, welcomed the move.

It was pointed out that the decision confirms industry claims that in spite of the trigger price system, imported steel is still being dumped in the U.S. at below production cost.

Although the case has not been brought against any of the largest importers, industry sources feel that the announcement will serve as a clear warning to others who might be violating the trigger price system.

The Treasury would not say what was the dollar volume or the tonnage involved. The American Iron and Steel Institute said however that almost one-third of the 2m tons of carbon steel plate imported into the U.S. in the first eight months of this year came from the three countries in which the individual companies named by the treasury are based.

After the investigation it will be up to the International Trade Commission to determine if the U.S. industry has been injured by the import.

The government can then impose fines or countervailing duties.

**Anastas Mikoyan dies at 82**

ANASTAS MIKOYAN, former Soviet Premier and one of the last links with 1917 Bolshevik revolution, died on Saturday at the age of 82, it was officially announced in Moscow last night.

The Tass News Agency quoted a statement from the Central Committee of the Communist Party and the Soviet Government as saying the Armenian politician died after a grave and long illness.

Mr. Mikoyan was generally regarded as the great survivor of Soviet politics, escaping from a firing squad in 1937 during the Stalin purges of the 1930s unscathed.

**Vance talks**

MR. CYRUS VANCE, U.S. Secretary of State yesterday finished almost six hours of "constructive" Strategic Arms Limitation Talks with Mr. Andrei Gromyko, Soviet Foreign Minister. David Satter writes from Moscow.

Mr. Vance is expected to see Mr. Leonid Brezhnev, the Soviet President, tomorrow for talks which are expected to concentrate exclusively on SALT.

## Pope John Paul II calls for open frontier

By RUPERT CORNWELL

St. Peter's Square packed with over 200,000 people, was attended by some 120 foreign delegations, a sign of the immense implications of a foreigner to the throne of St. Peter. Among them was Dr. Donald Coggan, Archbishop of Canterbury, the first leader of the Anglican community to attend such a ceremony since the Reformation.

In the vast crowd was a vociferous contingent of Poles, many dressed in their national costume and waving red and white Polish flags, who had been allowed to make the trip specially, to see the installation of the former Archbishop of

Cracow, Cardinal Wojtyla. The new pontiff again laid particular emphasis on the church's universal mission, symbolised by his surprise election last Monday. On two occasions he broke into Polish, before delivering his greetings to the world's Catholics in Italian, and then ten foreign languages.

And in his address Pope John Paul II urged his followers to work to open up the frontiers of states, economic and political systems and the vast fields of culture, civilisation and development.

In another sign of the intense interest aroused by the new

Pope, the Vatican newspaper, L'Osservatore Romano had sold out 40,000 copies by 9 a.m. this morning.

The inauguration ceremony itself ran for 24 hours considerably longer than scheduled, largely because of the new Pope's insistence on having a few words with each of the 117 cardinals as they paid him their traditional homage. But John Paul II ended affairs in the dawn, earth style that has always won the hearts of Italian and non-Italian Catholics alike. "We must stop now. It is time for lunch, both for you and for the Pope."

ROME, Oct. 22

## Spanish unions boycott arms

By DAVID GARDNER

MADRID, Oct. 22

THE SINDICATO Libre de la Marina Mercante (SLMM), the union which groups an estimated 35 per cent of Spain's merchant seamen, is to block all arms shipments destined for the dictatorships of Latin America's southern cone, Nicaragua, Southern Africa, and Morocco.

The decision was taken last night by mass meetings of the union in Bilbao and Valencia, the two Spanish ports most affected, and has subsequently been endorsed by the SLMM's executive and international secretariat.

The move follows a spate of revelations about Spain's discreet but growing role in the international arms trade, in the wake of the Aluli incident.

The Aluli was boarded by British troops at the end of last month, and found to be carrying 2,830 armalite rifles on

consignment to Barreiros Hermanas Internacionales in Bilbao. The affair led to a rush of publicity about Spain's arms trade, and calls by the major opposition parties for greater parliamentary control.

Shortly after the Aluli case, it was discovered that 88,100 kilos of mortars, 100,000 kilos of launchers had been shipped from Valencia in a Danish vessel on consignment to the Chilean armed forces. Then, only yesterday, it was revealed that the Argentine ship Rio Calchaqui had just taken aboard a shipment of 1,176 tons of grenades, mines and bazookas. The Rio Calchaqui is due to sail from Bilbao on Monday.

The SLMM's boycott will be aimed at all ships registered in Spain, carrying a Spanish crew, and all arms ship ments moved by sea between

Spanish ports, a traffic which they maintain should be carried by the Navy.

Spain has just embarked on the most important programme of arms purchases in its recent history. This will leave it with considerable surplus armaments, approved for sale to Third World nations, countries like South Africa which have difficulties in buying on the international market.

Two Spanish paramilitary Civil Guards were killed and two others seriously injured in a machine-gun attack outside a football ground in Bilbao yesterday, Reuter reports. The four were riddled with sub-machine gun bullets fired from a speeding car. Police said the killings had been committed by members of the ETA, the Basque separatist guerrilla group.

## Eanes due to name Premier

By Jimmy Burns

LISBON, Oct. 22

PRESIDENT RAMALHO Eanes of Portugal is expected to name a new Prime Minister within the next 48 hours in an attempt to settle the two-month Government crisis and avert early elections. The President will meet the main political parties on Monday afternoon before naming his approval for his choice from the Council of the Revolution, which constitutionally must be consulted.

The original presidential list of 11 candidates for the premier ship is believed to have narrowed over the weekend to three: Mr. Alfredo Nobre de Carvalho, the present caretaker Prime Minister; Mr. Carlos da Maia Pinto, a law professor and former parliamentary leader of the Social Democratic Party (PSD); and Mr. Jose da Silva Lopes, the present Finance Minister.

**Piraeus election**

With more than half the vote counted, Mr. Aristides Stylianakis, a Rightist candidate for mayor of Piraeus, was trailing his opponent, Mr. George Kyriakopoulos, who is backed by a Leftist Popular Front. In yesterday's run-off for the municipal elections, our Athens Correspondent writes.

## Assad meets Bakr this week

By IHSAN HIJAZI

BEIRUT, Oct. 22

WHAT MAY well be the first strategic Arab realignment and major development after conclusion of the Camp David Accords by Egypt and Israel, was announced in Damascus yesterday.

President Hafez al-Assad is to pay a "working visit" to Baghdad this week for talks with President Ahmed Hassan al-Bakr on a common confrontation against the Zionist campaign of imposing capitulation on the Arab nation, it was stated.

This will be Mr. Assad's first visit to Iraq in five years. The projected Syrian-Iraqi talks will set the stage for a joint front which, if successful, could throw Iraq's military weight against Israel.

Mr. Assad's visit could also end

years of conflict and friction between rival factions of the Arab Socialist Baath Party.

Informed sources here expect the immediate result of the talks will be the reopening of the border between Iraq and Syria, and a resumption of trade and other co-operation which has been in suspense for two years.

The Baghdad meeting could produce an alliance under which Syria might accept Iraq's recent offer of deploying troops on the Syrian front with Israel.

The talks are seen as crucial for the success of the projected Arab summit conference, scheduled in Baghdad for November 2. The objective is to consolidate the Arab position against the Camp David accords and per-

suade Egypt to avoid bilateral agreements with the Jewish state.

Iraq has proposed that the oil-rich Arab states set up a joint fund of \$500 million to finance the Arab Steadfastness Against Israel alliance, and provide Egypt with the assistance it will need to join the confrontation and abandon the Camp David Accords.

Meanwhile, the Lebanese Army Command has issued an order referring Major Saad Haddad and Major Sami Chidiac to a court-martial on a charge of collaborating with Israel and inciting Lebanese troops to mutiny.

The Sudan has agreed to keep its battalion serving with the Arab peace-keeping force here for another three months.

## Kenya puts election ban on Odinga

By John Worrall

MR. ODINGA ODINGA, a former Vice-President of Kenya, has been barred from standing for chairman of the Kumu Party in the party elections on October 28.

When Mr. Odinga appeared at Kumu headquarters on Saturday to hand in his papers, he was told by Mr. Robert Matano, acting secretary-general, that although he had paid \$50 for life membership of the party, the receipt he had been given was "not genuine."

Mr. Odinga was also told he had not been "cleared" by the party top executives to stand.

Mr. Odinga, 68, said he had offered to pay another £50 for life membership so he could contest the election. But the money had been refused on the grounds that he had "not got clearance."

He has appealed to President Arap Moi.

## Fighting reported throughout S. Yemen

By JAMIE BUCHAN

JEDDAH, Oct. 22

HEAVY FIGHTING is continuing in the province of South Yemen between armed forces units loyal to the executed President and militias of the ruling Marxist-Leninist Party, according to Abdullah al-Asnag Foreign Minister of North Yemen.

Apart from the capital Aden, where the recently created Yemen Socialist Party is believed to be in complete control, "there is fighting in all the Governorates," Mr. Asnag, himself of Adeni origin, told the Jeddah Daily Arab News on Saturday.

The South Yemeni armed forces, already thinned by desertions to Oman and North Yemen, are resisting party attempts to disband them following the execution of President Salem Rubaysi Ali, deposed in a coup last June, Sanaa Radio reported on Friday.

Mr. Asnag said that 20,000 southerners had fled north since the June coup, many of them officers and men of the armed forces, a figure confirmed as largely correct by diplomats in Jeddah.

Relations between the two Yemenis have deteriorated further following a mutiny by two brigades and the military police in the North Yemeni capital of Sanaa last week, which is also causing serious concern in Saudi Arabia. Mr. Asnag arrived in Jeddah Saturday night and was due to meet Crown Prince Fahd here today.

Without directly accusing Aden of complicity in the October 15 mutiny, Mr. Asnag said that captured mutineers had provided information of "relations with one or more foreign governments. We have evidence to prove the rebels were promised immediate foreign aid and support the moment they staged the coup."

## Oil-surplus states 'should form closer links with EEC'

By DOINA THOMAS IN BAHRAIN

AN APPEAL for closer co-operation between the Arab world, in particular the oil-surplus states, and the European Community and its financial institutions, was made by Lord Selsdon in Bahrain yesterday.

Lord Selsdon, a director of Samuel Montagu, was discussing the longer-term investment policies for OPEC oil surplus states at the two-day Financial Times conference on industrial development and finance in the Gulf. The conference was being held at the Hilton Hotel, Bahrain.

He was introduced by Mr. Hassan Fakhr, president of the Bahrain Society of Engineers, which co-sponsored the conference.

Lord Selsdon urged that the OPEC surplus countries give consideration to the settlement of oil transactions in European Community Units, and to the possibility of holding part of their reserves in those units, particularly in view of the present instability of the dollar.

Of the estimated \$200bn surplus, Lord Selsdon said that under 10 per cent had been invested or lent direct to the Third World countries.

He suggested co-operation through the medium of European institutions such as the European Development Fund and the European Investment Bank, and pointed out that the EEC was a major source of aid to the Third World.

The long-term prospects for the generation and utilisation of surplus oil revenues could depend as much on politics and political stability as on economic and energy demand.

Closer co-operation with EEC institutions could only be mutually beneficial.

Lord Selsdon was the first speaker at the conference, opened by Mr. Ibrahim Abdul Peake, a director of the British Bahraini Bank, Minister of Finance and National Economy.

Mr. Karim gave a brief overview of economic development, and detailed the objectives of the Bahrain Government's financial policy—one of the most important of which was diversification of the economy away from dependence on oil revenue.

"Perhaps one of the best illustrations of progress has been

## Oil-surplus states 'should form closer links with EEC'

By DOINA THOMAS IN BAHRAIN

the rapid development of Bahrain as a financial centre in its own style," he commented.

The Board of the Bahrain Monetary Agency, pointed out that the banking community in Bahrain was now one of the major employers in the islands.

Reviewing the progress of the Bahrain-based offshore banking market whose assets now total around \$22bn, Mr. Moore commented: "We have not yet shut

the door. We continue to welcome, particularly Arab-based or Arab-connected institutions."

Of the funds at present deployed by the market, some 85 per cent were in dollar deposits and loans, with about 55 per cent of business within the Arab world, 25 per cent with Europe, and 10 per cent with Asia.

The forward market in the biggest currency, that is, the Saudi riyal and the Kuwaiti dinar, is at least as good as the forward market in some of the European currencies," Mr. Moore declared.

The rather sensitive subject of offshore lending in Saudi riyals was discussed by Mr. David Peake, a director of the British Bahraini Bank, Minister of Finance and National Economy.

Two main factors contributed to the growth of the offshore market in Saudi riyals, he explained.

First there was the question of five Saudi domestic banks and in particular, their ability to lend restricted by Article 8 of the banking control law. This forbade them to lend more than 35 per cent of their own capital

## Oil-surplus states 'should form closer links with EEC'

By DOINA THOMAS IN BAHRAIN

and reserves to any one borrower.

This article, among others, restricted the ability of Saudi banks to satisfy all their customers' needs. The exchange rate was the second contributory factor.

"The offshore riyal market has a vital part to play in the financing of Saudi Arabia's development plans, public and private," Mr. Peake stated.

Mr. Moore had earlier revealed that the largest of Saudi's commercial banks, the National Commercial Bank of Saudi Arabia, had just been granted an offshore licence to operate in Bahrain.

The contribution of private funds to development in the Gulf was discussed by Mr. Abdul Rahman Al-Sai, director-general of the Arab Investment Company of Saudi Arabia.

Mr. Al-Sai, introduced by Mr. Abdullah Saff, director-general of the Bahrain Monetary Agency, pointed out that entrepreneurs and risk-takers "had no nationality."

Give them a feeling of fairness and equality and they will stay; treat them as second-class citizens and they will go."

Mr. Alain Camu, a director of Hill Samuel, reiterated the importance of investment banking institutions to development projects in the Arab oil-producing states.

Mr. Fauzi Sultan, managing director of the Bank of Kuwait and the Middle East, pointed out that while Kuwait had been growing rapidly as a financial centre, it still lacked legal framework within which a responsible financial sector could function.

Mr. Hazem Chalabi, general manager of the National Bank of Abu Dhabi, reviewed the United Arab Emirates' progress since the banking crisis of May 1977.

The first day's session was concluded by Mr. Tarek Shawaf, of Saudi Consulting Services, who reviewed the lessons to be learnt from developments in Saudi Arabia.

FINANCIAL TIMES  
Development in the Gulf  
CONFERENCE

## PLANT &amp; MACHINERY SALES

Description Telephone  
MODERN USED ROLLING MILLS, wire rod and tube drawing plant—roll forming machine—slitting—flattening and cut-to-length lines—cold saws—presses—guillotines, etc. 0902 42541/2/3  
Telex 336414

ROLLING MILLS  
12" x 10" wide variable speed four high mill. 0902 42541/2/3  
3.5" x 8" x 9" wide variable speed four high mill. 0902 42541/2/3  
10" x 12" wide fixed speed two high mill. 0902 42541/2/3  
10" x 30" wide fixed speed two high mill. 0902 42541/2/3

TON CAPACITY COINING PRESS by Taylor and Chubb—virtually unused—fully automatic—200 p.p.m. x 24 mm stroke. 0902 42541/2/3  
IN LINE MACHINE for simultaneous surface milling both sides of continuous and semi-continuous cast non-ferrous strip up to 16" wide. 0902 42541/2/3  
Telex 336414

9 DIE, 1750 FT/MIN SLIP TYPE ROD DRAWING MACHINE equipped with 3 speed 200 hp drive, 20" horizontal draw blocks, 22" vertical collecting block and 1000 lb spooler (Max. inlet 9 mm finishing down) to 1.6 mm copper and aluminium. 0902 42541/2/3  
Telex 336414

8 BLOCK (400 mm) IN LINE, NONSLIP WIRE DRAWING MACHINE in excellent condition 0/2200ft/min, variable speed 10 hp per block (1968). 0902 42541/2/3  
Telex 336414

24 DIAMETER HORIZONTAL BULL BLOCK SLITTING LINE 500 mm x 3 m 3 ton capacity 1974 FULLY AUTOMATED COLD SAW by Noble & Lund with batch control. 0902 42541/2/3  
Telex 336414

1000 mm x 25 mm 7 tonne coil fully overhauled and in excellent condition. 0902 42541/2/3  
Telex 336414

1965 TREBLE DRAFT GRAVITY WIRE DRAWING MACHINE by Farmer Norton 0902 42541/2/3  
Telex 336414

STRIP FLATTEN AND CUT-TO-LENGTH LINE 27" x 29" x 31" diameter drawblocks. 0902 42541/2/3  
Telex 336414

3 BLOCK WIRE DRAWING MACHINE, equipped with 22" dia. x 25 hp Drawrolls. 0902 42541/2/3  
Telex 336414

215 DIE MSA WIRE DRAWING MACHINES 5000ft/min, with spoolers by Marshall Richards. 0902 42541/2/3  
Telex 336414

3 CWT MASSEY FORGING HAMMER single blow. 0902 42541/2/3  
Telex 336414

9 ROLL FLATTENING MACHINE 1700 mm wide. 0902 42541/2/3  
Telex 336414

7 ROLL FLATTENING MACHINE 965 mm wide. 0902 42541/2/3  
Telex 336414

COLES MOBILE YARD CRANE 6-ton capacity lattice jib. 0902 42541/2/3  
Telex 336414

RWF TWO STAND WIRE FLATTENING AND STRIP ROLLING LINE 10" x 28" per roll stand. Complete with edging rolls, turks head flaking and fixed recoiler, air gauging, etc. Variable line speed 0/750 ft/min or 0/1500 ft/min. 0902 42541/2/3  
Telex 336414

NARROW STRIP WIRE FLATTENING AND CUT-TO-LENGTH MACHINE (1973) by Thompson and Munroe. 0902 42541/2/3  
Telex 336414

CINCINNATI GUILLotine 2500 mm x 3 mm capacity, complete with magnetic sheet supports and motorised back stops. 0902 42541/2/3  
Telex 336414

MACHINING CENTRE Capacity 5ft x 4ft x 3ft 5 Axes continuous path 51 automatic tool changer 5 tons main table load. Main motor 27 hp. Had less than one year's use and in almost new condition. For sale at one third of new price. 01-928 3131  
Telex 261771

4000 TON HYDRAULIC PRESS. Upstroke between columns 92" x 52" daylight 51" 01-928 3131  
Telex 261771

ANKERWERK 400 TON INJECTION MOULDER "dia. 750 mm cast pressure. 01-928 3131  
Telex 261771

UPSET FORGING MACHINE 12" dia. 750 mm cast pressure. 01-928 3131  
Telex 261771

2,000 TON PRESS. Double action area 132" x 84". 01-928 3131  
Telex 261771

WICKMAN 21 6SP AUTOMATICS 1961 and 1963 EXCELLENT CONDITION. 01-928 3131  
Telex 261771

WICKMAN 11" AUTOMATICS, 6 sp. Excellent. 01-928 3131  
Telex 261771

WICKMAN 11" AUTOMATICS, 6 sp. Excellent. 01-928 3131  
Telex 261771

CINCINNATI CENTRELESS GRINDER. Excellent. 01-928 3131  
Telex 261771

MAHO MH1000 UNIVERSAL TOOLROOM MILLER. Table 47" x 14". Excellent condition. 01-928 3131  
Telex 261771

LINDNER JIG BORER, very accurate. 01-928 3131  
Telex 261771

SLOTING MACHINE, 14" stroke, excellent. 01-928 3131  
Telex 261771

WANTED  
MODERN USED ROLLING MILLS, wire rod and tube drawing plant—roll forming machine—slitting—flattening and cut-to-length lines—cold saws—presses—guillotines, etc. 0902 42541/2/3  
Telex 336414















A copy of these particulars, having attached thereto the documents specified below, has been delivered to the Registrar of Companies for registration.

These particulars are given in compliance with the Regulations of the Council of The Stock Exchange for the purpose of giving information to the public with regard to Arncliffe Holdings Limited ("the Company"). The Directors collectively and individually accept full responsibility for the accuracy of the information given and confirm, having made all reasonable enquiries, that to the best of their knowledge and belief there are no other facts, the omission of which would make any statement herein misleading.

Application has been made to the Council of The Stock Exchange for the whole of the issued share capital of the Company to be admitted to the Official List.

The issued Ordinary shares of the Company rank pari passu in all respects.



# ARNCLIFFE HOLDINGS LIMITED

(Incorporated in England Under the Companies Acts 1948 to 1967. No. 1001245)



## These particulars are issued in connection with a placing

by

## Capel-Cure Myers Limited

### of 1,300,000 Ordinary Shares 10p each at 42½p per share.

#### SHARE CAPITAL

Authorized  
£500,000 in 5,000,000 Ordinary shares of 10p each ..... £500,000

Issued and  
Fully Paid  
£500,000

At the close of business on 13th October, 1978, the Company and its subsidiaries had outstanding £271,898 unsecured borrowings. Save as aforesaid and as disclosed in this document and apart from inter-company indebtedness neither the Company nor any of its subsidiaries had outstanding as at 13th October, 1978, any borrowings or indebtedness in the nature of borrowing including loan capital, bank overdrafts, liabilities under acceptances (other than normal trade bills) or acceptance credits, hire purchase commitments or, guarantees or other material contingent liabilities.

#### DIRECTORS:

MANNY CUSSINS (Chairman), Lands Lane, Leeds, LS1 6LE.  
ISADORE (IAN) FISCH, LL.B. (Deputy Chairman and Joint Managing Director),  
Holbeck Chambers, 101 The Headrow, Leeds, LS1 5JW.  
WALTER ARNOLD RATCLIFFE (Joint Managing Director), Holbeck Chambers, 101 The  
Headrow, Leeds, LS1 5JW.  
JOHN ROBERT CUSSINS (Non-Executive Director), 188 Regent Street, London, W.1.

#### SECRETARY AND REGISTERED OFFICE:

MALCOLM DAVID THORLEY, F.C.A., Holbeck Chambers, 101 The Headrow, Leeds,  
LS1 5JW.

#### BANKERS:

NATIONAL WESTMINSTER BANK LIMITED, 1 High Street, Sheffield, S1 1PR.  
BARCLAYS BANK LIMITED, Vicar Lane Branch, 1 The Headrow, Leeds, LS1 1JS.

#### STOCKBROKERS:

CAPEL-CURE MYERS LIMITED, Bath House, Holborn Viaduct, London, EC1A 2EU  
and The Stock Exchange.

#### SOLICITORS TO THE COMPANY:

KERSHAW, TUDOR & CO., 58/64 Campo Lane, Sheffield, S1 1FW.  
SPENCER & FISCH, Holbeck House, 105 Albion Street, Leeds, LS1 5AT.

#### SOLICITORS TO THE PLACING: TRAVERS SMITH, BRATHWAITE & CO., 6 Snow Hill, London, EC1A 2AL.

#### AUDITORS AND JOINT REPORTING ACCOUNTANTS:

COBLEN, BOARD & CO., Chartered Accountants, Fountain House, Broomsgrove Road,  
Sheffield, S10 2LS.

#### JOINT REPORTING ACCOUNTANTS:

THOMSON MCINTOCK & CO., Chartered Accountants, Royal Exchange House, City Square,  
Leeds, LS1 5NU.

#### REGISTRARS AND TRANSFER OFFICE:

NATIONAL WESTMINSTER BANK LIMITED, P.O. Box 82, 37 Broad Street, Bristol,  
BS9 9NH.

#### LETTER FROM THE CHAIRMAN.

The following is a copy of a letter to Capel-Cure Myers Limited from Mr. Manny Cussins,  
Chairman of the Company.

The Directors,  
Capel-Cure Myers Limited,  
Bath House,  
Holborn Viaduct,  
London, EC1A 2EU.

Holbeck Chambers,  
101 The Headrow,  
Leeds,  
LS1 5JW.

20th October, 1978.

#### Management and Staff

I am 72 years of age and am still actively engaged in business.

Ian Fisch who is 53 years of age is Deputy Chairman and Joint Managing Director and has a four year service contract with the Company (Contract No. (f) below). He is now devoting an increasing amount of his time to the running of the business and is primarily concerned with the purchase of land, planning and sales, and administration including financial matters. He was until recently, Senior Partner of Spencer & Fisch, a firm of solicitors in Leeds of which he remains as a Consultant having retired from the Partnership.

Walter Ratcliffe is 49 years of age and has had over 30 years of experience in the house building industry. He is Joint Managing Director and has a service contract for five years, (Contract No. (g) below). He is responsible for the whole of the building programme and is also concerned with the acquisition of land, layout, design and all other facets of estate development. The success of the Company has been in no small part due to his endeavours.

My son John Cussins, who is 33 years of age, with considerable commercial experience, was appointed a Non-Executive Director on 20th October, 1978.

Peter Ratcliffe, who is 45 years of age and has 30 years' experience in the house building industry, is the Company's Contracts Manager in charge of area managers and site agents. He is the brother of Walter Ratcliffe, and is on the Board of Ratcliffe.

The Company Secretary, David Thorley, F.C.A., (aged 45) is at present responsible in addition to his administrative and secretarial duties, for supervising the preparation of accounts and management information. As a result of the continuing growth of the Group's business and anticipated future expansion, the Board has decided to appoint a Group Chief Accountant and Mr. J. A. F. Walker, C.A., aged 29 is joining the Company to fill this position in December 1978.

The total number of employees of the Group, including engineering, drawing, technical design staff and the sales organisation is now approximately 125. We do, however, employ various specialist sub-contractors to carry out certain investigative and building operations, and engage local estate agents to assist in selling. I am pleased to say that labour relations in the Group are excellent.

The introduction of pension arrangements for staff is currently being actively considered.

#### Premises and Plant

The Company at present occupies leasehold showroom and office premises, extending to some 2,400 square feet at Holbeck Chambers, 101 The Headrow, Leeds, LS1 5JW. The lease of these premises runs until 23rd June, 1991 at a present annual exclusive rent of £7,140 with a review at 23rd June, 1984. (See heading "Directors and Other Interests" below.)

The Company also owns and occupies a freehold depot at Pepper Road, Leeds consisting of a building of about 8,000 square feet on two floors and a yard of some 4,500 square feet.

A certain amount of general purpose plant is owned by the Company, other equipment being hired as and when required.

#### Land Valuation

Weatherall, Hollis & Gale, Chartered Surveyors, have made a Valuation of the Group's freehold and leasehold land held at 1st September 1978 and a copy of this Valuation is set out below.

It will be seen that the Valuation has been made at open market values as at 1st September, 1978. Account has been taken of the planning permissions available in respect of the land, which is classified in the Valuation according to the status of the planning consents at the relevant time. The total valuation of the land held by the Group for development at 1st September, 1978 as shown in Schedules 1, 2 and 3 to the Valuation was £1,915,750 which shows a surplus over book values at the same date of £1,143,304. No provision has been made for any tax which may arise on the realisation of the surplus and it is intended that the increase in value arising from this Valuation should be written into the books of the Group.

#### Working Capital

The Directors are of the opinion that, taking into account the available bank facilities, the Group has sufficient working capital for its present requirements.

#### Profits, Profit Forecast and Dividends

The turnover and profits for the last five years to 31st October, 1977 and for the six months to 30th April, 1978 are set out in the Accountants Report below.

We have always believed that there is a healthy demand for new homes and that we have the flexibility to adapt to changes in market conditions. Even in 1974/75 which was a time of abnormal economic recession we produced satisfactory results by prudent control of the Group's resources.

Now that we have disposed of a number of sites which we had held for commercial development, thus saving considerable bank interest, we are in a stronger position to improve our results from residential development.

The saving of interest is reflected in the substantially increased profits shown in the first six months of the current year.

In the absence of unforeseen circumstances the directors forecast that the profit before taxation and extraordinary items for the year ending 31st October, 1978 will be not less than £650,000 of which some £28,000 will be attributable to sales of land and commercial sites.

On the basis of the director's forecast of profit for the year ending 31st October, 1978, the directors intend to recommend, for payment in or about May 1979, a final dividend of 2.01p per share (3p with related tax credit of 33%). This would be the first dividend payable by the Company subsequent to its admission to the Official List.

In respect of a full year in which a similar level of profit was earned the directors would expect to recommend dividends totalling 2.53p per share, (3.8p with related tax credit of 33%). It is intended in future years to pay an interim dividend in or about November and a final dividend in May.

The following table sets out by way of illustration only, how a profit before taxation of £650,000 would be appropriated assuming Corporation Tax at the rate of 52% (column (1)) and assuming a charge for Advance Corporation Tax only which takes into account relief that I am advised may be expected to be available to the Group in 1978 and which would reduce mainstream Corporation Tax to nil (column (2)):-

	(1)	(2)
Profit before taxation and extraordinary items	650,000	650,000
Less: Taxation (see above)	338,000	62,800
Profit after taxation	312,000	587,200
Less: Ordinary Dividend of 2.53p per share	127,500	127,500
Retained Profit	184,500	459,700
Dividend cover	2.44 times	4.6 times

On the above basis the gross yield on the Ordinary shares at the placing price of 42½p per share would be 8.9% and the price/earnings multiple would be 6.8 on a full tax charge and 5.6 on the reduced tax charge. Net tangible assets based on the last published balance sheet as at 31st October, 1977 and adjusted for the revaluation of the Company's land and the increase in the issued share capital to £500,000, would amount to 56p per share.

Waivers in respect of the proposed dividend (in excess of 0.1p per share) to be paid in May 1979 affecting approximately 60% of the issued capital have been received.

Yours faithfully,  
MANNY CUSSINS

#### ACCOUNTANTS' REPORT

The following is a copy of the report of Coblen, Board & Co., Chartered Accountants, auditors of the Company and Joint Reporting Accountants, and of Thomson McIntock & Co., Chartered Accountants, Joint Reporting Accountants, to the directors of the Company and of Capel-Cure Myers Limited.

Fountain House,  
Broomsgrove Road,  
Sheffield, S10 2LS.

Royal Exchange House,  
Leeds, LS1 5NU.

#### The Directors

ARNCLIFFE HOLDINGS LIMITED and  
CAPEL-CURE MYERS LIMITED.

20th October, 1978.

Gentlemen,  
We have examined the audited accounts of Arncliffe Holdings Limited ("the Company") and the Company and its subsidiaries ("the Group") as follows:-

	for the period from 1st November, 1972 to 30th April, 1978
Arncliffe Holdings Limited:	for the period from 1st November, 1972 to 30th April, 1978.
Walt. Ratcliffe Limited:	for the period from 1st November, 1972 to 30th April, 1978.
Arncliffe Sales Limited:	for the period from 1st November, 1972 to 30th April, 1978.
Arncliffe Melbourne Properties Limited:	for the period from 1st November, 1972 to 30th April, 1978.
Dalbury Limited:	for the period from 1st November, 1972 to 30th April, 1978.
Cortewell Limited:	for the period from 27th November, 1973 to 30th April, 1978.

No accounts of Everest Limited have been prepared since its incorporation on 1st May, 1975; this Company has not traded.

Coblen, Board & Co. have been the auditors of the Company and all its subsidiaries for all the relevant periods. The summarised profits and loss accounts, balance sheets and source and application of funds statements (the summaries) set out below, are based on the audited accounts of the Group which have been prepared under the historical cost convention, after making such adjustments as we considered appropriate. The summaries exclude the accounts of certain subsidiary management companies, which are formed for the purpose of providing management and maintenance of certain sites developed by the Group and which are sold to the residents of the completed developments.

The significant accounting policies adopted in arriving at the financial information set out in this report, are as follows:-

- Consolidation**  
The accounts of the Company and its subsidiaries are made up to 31st October in each year to 1977, and to 30th April, 1978.
- Profit and turnover**  
Profit arising from estate development is brought into account as the sales of houses and flats are completed. The value of dwellings sold represents completed sales of houses and flats during the year. The turnover of profit on sale of undeveloped property and land is included when sales are completed.
- Interest payable**  
All interest is charged to profit and loss account as incurred.
- Depreciation**  
Depreciation is provided on fixed assets in equal annual instalments over their estimated lives at the following rates:  
Freehold land, freehold improvements and leasehold property Nil  
Plant and equipment 10%  
Motor vehicles 25%
- Land and undeveloped property, and work in progress**  
Land and undeveloped property, and work in progress are stated at the lower of cost and net realisable value. Cost of work in progress includes the normal overheads associated with construction.
- Deferred taxation**  
No provision is made for taxation deferred by reason of stock appreciation relief and other timing differences unless it is expected to become payable within the foreseeable future.
- Development land tax**  
Development land tax payable is included in cost of sales.

**Profit and Loss Accounts**  
The consolidated profit and loss accounts of the Group for the five years ended 31st October, 1977 and the six months ended 30th April, 1978, are:

	Year ended 31st October					Six months ended 30th April
	1973	1974	1975	1976	1977	1978
<b>DWELLINGS SOLD</b>						
Number of units	185	166	213	257	281	131
Value	£ 908	£ 908	£ 908	£ 908	£ 908	£ 908
Cost of sales	1,117	859	1,889	2,322	2,782	1,382
Profit before charging interest arising from estate development	857	639	1,489	1,783	2,277	1,437
Profit on sale of undeveloped property and land	280	220	463	528	678	286
Trade investment written off	512	43	—	—	—	(1)
Commission received	—	2	4	1	—	—
Rents received	—	2	4	1	—	—
Bank interest payable less receivable	775	271	468	541	476	314
<b>PROFIT BEFORE TAXATION</b>	88	113	38	142	142	28
<b>TAXATION (Note 2)</b>	876	154	378	368	333	284
<b>PROFIT AFTER TAXATION</b>	181	127	172	—	—	—
<b>PROFIT AFTER TAXATION</b>	916	191	207	368	333	284
<b>MINORITY INTERESTS</b>	28	11	(13)	(1)	—	—
<b>RETAINED PROFITS</b>	495	170	219	367	333	284
<b>EARNINGS PER SHARE (Note 3)</b>	£ 0.89	£ 0.40	£ 0.36	£ 0.46	£ 0.46	£ 0.36
<b>EARNINGS PER SHARE (Diluted)</b>	£ 0.88	£ 0.39	£ 0.36	£ 0.46	£ 0.46	£ 0.36
<b>PROCEEDS OF SALE OF UNDEVELOPED PROPERTY AND LAND</b>	1,847	84	—	—	—	210
Cost of sales	15	15	17	18	18	18
Depreciation	2	5	12	15	15	8
Wear and tear	—	—	—	—	—	—
Gift of plant	—	—	—	—	—	—
<b>PROFIT</b>	18	12	14	28	25	27

21.10.1978



# ARNCLIFFE HOLDINGS LIMITED

## Balance Sheet

The consolidated balance sheet of the group at the end of the 5 years to the 31st October, 1977 and at 30th April, 1978, and the balance sheet of the company at 30th April, 1978, are:

The Company At 30th April 1978	The Group At 31st October	At 30th April 1978
£'000	£'000	£'000
Fixed assets (Note 4)	1,000	1,000
Cost of shares in subsidiaries	71	71
Trade investments	2	2
Current assets		
Land and undeveloped property at cost	411,122	1,217,122
Work in progress	300	272,642
Amounts owing by subsidiaries	19	27
Debtors	19	27
Cash with building societies	19	27
Less: Current liabilities		
Bank overdrafts	642	642
Creditors	123	175
Corporation tax	1	153
Amounts due to subsidiaries	723	664
	1,217,122	1,217,122
	1,217	1,217
Net current assets	1,217	1,217
NET TANGIBLE ASSETS	1,217	1,217
Representing:		
Share capital	5	5
Retained profits	1,212	1,212
Capital reserve arising on revaluation	19	19
Goodwill arising on acquisition	(71)	(71)
Minority interest (Note 5)	19	19
	1,217	1,217

## Source and Application of Funds

The source and application of funds for the Group for the five years ended 31st October, 1977 and the six months ended 30th April, 1978 are:

	Five years ended 31st October	Six months ended 30th April
£'000	£'000	£'000
<b>SOURCE OF FUNDS</b>		
Profit before tax and minority interests	870	154
Depreciation	2	5
Trade investments written off	—	—
Total generated from operations	872	159
Funds from other sources	—	—
Proceeds of sale of fixed assets	2	2
	874	161
<b>APPLICATION OF FUNDS</b>		
Purchase of fixed assets	15	15
Taxation paid	2	2
Additional cost of subsidiaries	—	—
Purchase of trade investments	1	1
	18	18
<b>INCREASE/(DECREASE) IN WORKING CAPITAL</b>		
Increases/(decreases) in:		
Trade receivables	(31)	(31)
Trade payables	(15)	(15)
Debtors	(45)	(45)
Creditors	642	642
Corporation tax	1	1
	556	556
<b>MOVEMENT IN LIQUID FUNDS</b>		
(Increase)/decrease in bank overdrafts less cash balances	(3)	(3)
	(3)	(3)

The summaries given above should be read in conjunction with the notes set out below.

## Notes on the Summary

- Dividend**  
No dividends have been paid in the period under review.
- Taxation**  
Taxation represents corporation tax payable on the profits of each year. Taxation calculated at 52 per cent, deferred by reason of stock appreciation relief for which no provision has been made in the accounts at 30th April, 1978 amounts to approximately £485,000.
- Earnings per share**  
Earnings per share is based on the profit after taxation and on the 5,000,000 ordinary shares of 10p each in issue at the date of the placing.
- Fixed assets**  
The net book value of fixed assets, which are stated at cost, less accumulated depreciation for plant, equipment and motor vehicles, is as follows:

	At 31st October	At 30th April 1978
£'000	£'000	£'000
Freehold and leasehold property	5	5
Plant and equipment	5	5
Motor vehicles	22	22
	32	32

The fixed assets of the company and the group at 30th April, 1978, were made up as follows:

Group	Company
£'000	£'000
Freehold land	5
Freehold reversion	2
Leasehold property	2
Plant and equipment	5
Motor vehicles	18
	32

Freehold reversion represents the freehold title retained relating to developments of flats or town houses which are sold leasehold.

## Minority Interests

Minority interests in the shares of subsidiary companies during the period under review were as follows:  
Walt, Ratcliffe Limited: 25%—period 1st November, 1972 to 31st October, 1978.  
Arncliffe Mills Properties Limited: 33%—period 1st November, 1972 to 31st October, 1978.  
Arncliffe Sales Limited: 25%—period 1st November, 1972 to 31st October, 1978.  
25%—period 2nd November, 1975 to 31st October, 1978.

All subsidiary companies at 30th April, 1978 were wholly owned by Arncliffe Holdings Limited.

## Accounts

No audited accounts of the Company or any subsidiary have been prepared for any period ending after 30th April, 1978.

## Cobden, Board & Co.

Chartered Accountants  
Thomson, McLintock & Co.  
Chartered Accountants

## Information relating to Profit Forecast

### Principal Assumptions

The forecast of profit before taxation and extraordinary items for the year ending 31st October, 1978 of not less than £250,000 referred to in the Chairman's Letter includes results shown by audited interim accounts for the 6 months ended 30th April, 1978 and by the unaudited management figures for the period ended 31st August, 1978 and is made on the following principal assumptions:

- That contracts for sale of dwellings already signed and scheduled for completion prior to 1st November, 1978 will be duly completed before that date and;
- That there will be no material liabilities arising out of possible claims other than those for which provision has already been made.

### Letter relating to the Profit Forecast

(a) The following is a copy of a letter from Cobden, Board & Co., Chartered Accountants, and Thomson, McLintock & Co., Chartered Accountants, relating to the forecast of consolidated profit of the Group for the year ending 31st October, 1978.

The Directors  
ARNCLIFFE HOLDINGS LIMITED  
20th October, 1978.

### Comments

We have reviewed the accounting bases and calculations for the profit forecast (for which you are solely responsible) of Arncliffe Holdings Limited and its subsidiaries ("the Group") for the year ending 31st October, 1978 set out in the particular dated 30th October, 1978. The forecast includes results shown by audited interim accounts for the 6 months ended 30th April, 1978.

In our opinion the forecast, so far as the accounting bases and calculations are concerned, has been properly compiled on the footing of the assumptions made by you set out in the said particulars and is presented on a basis consistent with the accounting policies normally adopted by the Group.

Yours faithfully,  
Cobden, Board & Co.  
Chartered Accountants  
Thomson, McLintock & Co.  
Chartered Accountants

(b) The following is a copy of a letter from Capel-Cure Myers Limited relating to the forecast of consolidated profit of the Group for the year ending 31st October, 1978.

The Directors  
ARNCLIFFE HOLDINGS LIMITED  
20th October, 1978.

### Comments

We refer to the forecast of profit of your Company and its subsidiaries for the year ending 31st October, 1978 contained in the particulars dated 30th October, 1978.

We have discussed with officers of your Company the bases and assumptions on which the profit forecast was made. We have also considered the letter dated 20th October, 1978 addressed to you from Cobden, Board & Co. and Thomson, McLintock & Co. regarding the accounting bases and calculations underlying the profit forecast.

On the basis of the above, we consider that the profit forecast (for which you are solely responsible), has been made with due care and attention.

Yours faithfully,  
For Capel-Cure Myers Limited  
R. A. M. LEDERMAN,  
Director

## VALUATION

The following is a copy of a report from Weatherall Hollis & Gale, Chartered Surveyors—

29 Essex Street,  
Leeds LS1 5TH.  
20th October, 1978.

## The Directors

### ARNCLIFFE HOLDINGS LIMITED

### Comments

You have instructed us to value the interests of Arncliffe Holdings Limited ("the Company") and its subsidiaries ("the Group") in the land, details of which are set out in the attached Schedule. We have carried out inspections, made site visits, obtained copies of title deeds and other documents, and we have considered the valuation of the Group's interests in such land as at the 1st September, 1978. As regards land you have contracted to purchase at or since 1st September 1978, we have valued such land as if it had been held by the Group at that date.

In the case of land with planning permission, we have only valued land on which housing units remained to be completed or sold or upon which no building had yet commenced as at the 1st September, 1978 and we have shown the estimated number of such housing units. We have excluded the value of any site preparation, roads, services, house building or other construction work which may have been carried out on such land. We have assumed that access and services have been available to the land and that there is no expenditure necessary by the Group on land not owned by the Group.

We have seen the Certificate of Title, but (apart from the contract for purchase of Broadmeadows) we have not inspected any documents of title and for the purposes of the valuation we have accepted the details of tenure, contracts to purchase, present lettings, leases, planning consents and all other relevant information with which we have been supplied by you. We have assumed that all properties are freehold except where stated and are free from encumbrances and outgoings other than those of which you have informed us. You have advised us that there are no statutory notices outstanding.

We have not valued any land or interest in land which is subject to a mortgage or other charge or which is subject to a development land tax or any other form of taxation which would arise in the event of a disposal or a deemed disposal.

We have inspected a copy of the contract between Derbyshire County Council and Arncliffe Holdings Limited dated 2nd October, 1978, for the sale to the Company of 20.45 acres of land with outline planning permission for residential development together with the benefit of rights to purchase up to a further 44.10 acres and with the benefit of certain rights by the vendors. We have valued this 20.45 acres of land (upon which 122,290 sq. ft. is still to be paid to the Vendors) as if it had been owned and fully paid for by the Company as at 1st September, 1978.

We are of the opinion that the open market value of the land and properties as set out in the attached schedules based on market conditions as at 1st September, 1978 is £2,235,000.

### SCHEDULE 1: Land held 1st September, 1978 with detailed or outline planning permission for residential development

County	Site	Area	Remarks	Value
West Yorkshire	Grange Lane, Mabley	5,370	64	1,931
West Yorkshire	Wood Street, Hemsworth	5,453	72	1,931
West Yorkshire	Grange Lane, Ryburn	42	7	8
West Yorkshire	Linker Park, Huddersfield	12,378	130	1,931
West Yorkshire	Alm Lane, Ossett	1,218	7	1,931
West Yorkshire	Church Lane, Harewood	1,772	19	1,931
West Yorkshire	West Hill, Birstall	2,244	2	1,931
West Yorkshire	Fleet Lane, Tackley	18,125	178	1,931
West Yorkshire	Brumfirth Road, York	3,680	13	1,931
West Yorkshire	South Lane, Barrow Lebock	1,180	11	1,931
Humberston	Manby Road, Loughborough	18,195	110	1,931
Humberston	Main Street, Witherslack	2,850	53	1,931
Lincolnshire	North Kelsey Road, Caistor	2,370	18	1,931
TOTALS		70,492	691	£1,727,000

### SCHEDULE 2: Land held 1st September, 1978 with planning permission for industrial or commercial development

County	Site	Area	Remarks	Value
West Yorkshire	Lower Brunswick Street, Leeds	0.390	Factory and ancillary offices	£54,000
West Yorkshire	Dale Street, Ossett (leasehold—39 years from 28.3.1974 at a ground rent of £250 p.a. with reviews every 21 years)	0.348	Shops and storage	£54,000
TOTALS		0.738		£108,000

### SCHEDULE 3: Land held 1st September, 1978 without planning permission

County	Land	Area	Remarks	Value
West Yorkshire	Plant Lane, Tackley	6,000	8	£194,750
West Yorkshire	Back Lane, Balmby	37,550	375	£194,750
West Yorkshire	Marlborough Field Farm, Claxton	37,550	375	£194,750
West Yorkshire	Carleton Lane, Ossett	0.321	3	£194,750
West Yorkshire	Westgate Hill, Birstall	0.413	4	£194,750
Lincolnshire	York Street, Barmston	12,434	124	£194,750
TOTALS		94,318	943	£194,750

### SCHEDULE 4: Freehold investments with benefit of Ground Rents held 1st September, 1978.

County	Address	Details	Ground Rent p.a.	Value
West Yorkshire	Thames Court, West Park, Leeds	125 years from 1.7.71 ground rent reviews every 25 years	700.00	£32,000
West Yorkshire	Canfield House, Alwoodley, Leeds	125 years from 1.7.71 ground rent reviews every 25 years	750.00	£32,000
West Yorkshire	Arncliffe Grange, Marston, Leeds	99 years from 1.4.74 ground rent reviews every 25 years	540.00	£32,000
West Yorkshire	Arncliffe Court, Huddersfield	99 years from 1.7.74 ground rent reviews every 25 years	950.00	£32,000
West Yorkshire	Harewood House, Harewood	300 years from 1.7.77	400.00	£32,000
West Yorkshire	Flats 1-4 Georgian Court, Alwoodley, Leeds	from 21.5.71	4.00	£32,000
West Yorkshire	Flats 1-4 Crescent Court, Alwoodley, Leeds	from 1967/7	8.00	£32,000
West Yorkshire	37, 38, 41 Manor Close, Manor Lane, Ossett	3 leases of 999 years from 1.7.78	75.00	£32,000
West Yorkshire	Arncliffe House, Farnley Road, Yorks	99 years from 1.10.74 ground rent reviews every 25 years	540.00	£32,000
West Yorkshire	Meadow Court, Barton Leonard	300 years from 1.7.77	175.00	£32,000
West Yorkshire	Crawford Gardens, Ryburn	3 leases for 999 years from 1.7.78	225.00	£32,000
West Yorkshire	Flats 6, 8, 9, 12, 14, 16, 17, 18, 22 Hamster Grange, Huddersfield	2 leases for 999 years from 1.7.78	90.00	£32,000
Humberston	Flat 18, Farnside Drive, Loughborough	300 years from 1.7.78	25.00	£32,000

### SCHEDULE 5: Miscellaneous property held 1st September, 1978.

County	Address	Description	Value
West Yorkshire	Mill Lane, Gildersome	3 lock-up garages	£1,650
West Yorkshire	Georgian Court, Alwoodley	1 lock-up garage	£1,650
Seven small parcels of land in Yorkshire			£1,650

### SCHEDULE 6: Premises occupied by the Company

County	Address	Description	Value
West Yorkshire	Pepper Road, Leeds 11	Valuers premises and yard	£24,500
West Yorkshire	Holbeck Chambers, Leeds 1	Showrooms and offices. (Leasehold to year 1991 with review in 1994. Current rent £7,140)	£24,500

### SCHEDULE 7: Land under option to purchase at 1st September, 1978 or contracted to purchase since 1st September, 1978 with planning permission for residential development.

County	Site	Area	Remarks	Value
West Yorkshire	Linker Park, Huddersfield	1,321	Planning permission for 12 housing units.	£282,000
Derbyshire	Broadmeadows Estate, Alfreton, Derbyshire	20,450	Has Conditional Preference shares of £1 each. The contract includes options to purchase up to a further 44.10 acres and provides for some roads and other work to be carried out by Derbyshire County Council.	£2,235,000
TOTAL		22,771		£2,517,000

In our opinion, the total shown for each section would not be appreciably different if we had valued as at today's date.

Yours faithfully,  
WEATHERALL HOLLIS & GALE,  
Chartered Surveyors.

## STATUTORY AND GENERAL INFORMATION

### 1. Capital History

The Company was incorporated as a private company on 1st February, 1971 with an authorised capital of £5,000 in 5,000 shares of £1 each of which only the two subscribers shares were issued, for cash at par. In June 1971, 4,998 additional shares of £1 each were issued for cash at par.

In August 1974, 350 additional shares of £1 each in the capital of the Company were issued, credited as fully paid up in part consideration of the acquisition by the Company of the outstanding 25% of the capital of Ratcliffe.

On 20th October, 1978 resolutions of the Company were passed whereby:

- each existing share of £1 in the capital of the Company was sub-divided into 100 Ordinary shares of 10p each;
- the authorised capital was increased to £600,000 by the creation of 5,946,500 additional Ordinary shares of 10p each;
- the Company was converted into a public company and new Articles of Association were adopted;
- 4,946,500 new Ordinary shares of 10p each were issued credited as fully paid pursuant to a resolution capitalising reserves.

### 2. Subsidiaries

The Company has the following wholly owned subsidiaries all of which are private companies incorporated in England—

Name of Company	Date of Incorporation	Issued Share Capital	Principal Activity
Walt, Ratcliffe Limited	1.10.1955	2,000 Ordinary shares of £1 each and 2,000 5% Non-Cumulative Preference shares of £1 each.	Building
Bainley Limited	21.10.1959	740 Ordinary shares of £1 each	Land Drilling
Arncliffe Sales Limited	21.10.1972	100 Ordinary shares of £1 each	Dormant
Arncliffe Holdings Limited	12.10.1972	100 Ordinary shares of £1 each	Property Development
Corstons Limited	12.10.1973	100 Ordinary shares of £1 each	Dormant
Ernest Limited	1.5.1975	2 Ordinary shares of £1 each	Dormant

In addition certain of the Group's developments are carried on through subsidiary management companies the issued shares in which are all assigned to the relevant development proceeds to completion.

## 3. Contract with Capel-Cure Myers Limited

Under Contract No. 610 below Capel-Cure Myers Limited has agreed, subject to the whole of the listed share capital of the Company being admitted to the Official List of the Stock Exchange not later than 30th November, 1978, to purchase from the Ordinary shareholders a total of 1,200,000 Ordinary shares at a price of 42p per share less a commission of 1p per share (plus Value Added Tax) with a view to such shares being placed with their clients and other members of the public. The contract provides that the Company will pay all the expenses of and incidental to the application for the listed share capital of the Company to be admitted to the Official List including all the costs of preparation, printing and advertising of these particulars, all accountancy, valuation and legal expenses and a fee to Capel-Cure Myers Limited.

The vendors and the numbers of shares agreed to be sold by them respectively are:—Manny Cousins, 115,700; Ian Fish, 57,447; Walter Arnold Ratcliffe, 18,551; John Joseph Ratcliffe, 112,700; John Robert Cousins, 251,500; Mrs. Audrey Reuben, 97,632; Mrs. Eve Board, 2,158; Peter Barry Ratcliffe, 105,551.

## 4. Directors and other interests

(a) After completion of Contract No. 610, the interests (as defined by the Companies Act 1967) of the directors and their families in the Ordinary share capital of the Company all of which are beneficial will be as follows:—

Mr. M. Cousins	251,500
Mr. I. Fish	1,757,000
Mr. W. A. Ratcliffe	125,000
Mr. J. R. Cousins	703,000

In addition Mrs. A. Reuben is beneficially interested in 251,200 Ordinary shares representing 5.6 per cent. of the issued share capital and Mr. J. R. Cousins has a beneficial interest in 251,500 Ordinary shares representing 5.6 per cent. of the issued share capital. Save as aforesaid the Directors are not aware of any holdings of five per cent. or more in the issued share capital.

(b) Under the terms of a Lease dated 7th July, 1976 Mr. I. Fish has subject to the Company certain housework and office premises at Holbeck Chambers, 101 The Headrow, Leeds, at a present annual rental of £1,000 per annum and the lease is for a term of 10 years from 7th July, 1976, at a rent which is paid by Mr. Fish under his head lease. No gain or loss accrues to Mr. Fish under this arrangement.

## 5. Articles of Association

The Articles of Association of the Company contain provisions (inter alia) to the following effect:—

(a) Subject to any special rights or restrictions as to voting attached to any shares by or in accordance with the Articles of Association of the Company, each share shall have one vote and on a poll every Member present personally or by proxy shall have one vote for every Ordinary share held by him. A corporation, being a Member, is deemed to be present personally if represented by a properly authorised representative. No member shall unless the Directors otherwise determine be entitled to vote or exercise any right conferred by membership in relation to meetings of the Company if he or any person appearing in his name is not entered in the register of members in default of supply of return on any form within 28 days of the information required by a valid notice served under Section 21 of the Companies Act 1976.

(b) The Directors shall be entitled to receive by way of remuneration for their services as directors such sum as shall from time to time be determined by the Company in General Meeting. Such sum shall be payable to the directors by the Company in such manner as the Directors shall determine. The Board may also determine that any or all of the Directors shall be entitled to receive by way of remuneration a commission on the net profit of the Company but shall not be payable to any Director holding the office of Chairman or Deputy Chairman or any Executive Officer or appointed to discharge special duties or functions on behalf of the Company. The Directors shall also be entitled to receive by way of remuneration a commission on the net profit of the Company being a sum equal to 2 per cent. of the amount by which the net profit as determined in the Company's Articles of Association is increased by the Directors' remuneration. The Board may also determine that any or all of the Directors shall be entitled to receive by way of remuneration a commission on the net profit of the Company being a sum equal to 2 per cent. of the amount by which the net profit as determined in the Company's Articles of Association is increased by the Directors' remuneration. The Board may also determine that any or all



# Building and Civil Engineering

## Higgs & Hill will press on

BOADICEA notwithstanding, Higgs and Hill Building will start on its £8.1m contract for a major office block development off Cannon Street and right on top of this year's City Dig, in January, come what may, or so the message from the company with the news of its contract runs.

It had earlier been reported that Electricity Supply Nominees, for which the big Watling Court development project is to be carried out, was on the point of seeking £1m from its insurers because the dig had delayed start

of work on the development — estimated at a total capital cost of £15m — by some three months, from September to January.

Other work will include the complete demolition or the rehabilitation of buildings along the Watling Street frontage.

Architects for this key City development are Fitzroy Robinson and Partners and consulting engineers Rybka Smith and Gaisler.

The refurbishing/construction job involves a total of 100,000 square feet and may take some 21 months to complete.

For Higgs and Hill, the major office block at Watling Court off Cannon Street demands the creation of a five to seven-storey building with a gross floor area of 87,330 square feet. It will be U-shaped and have an open central area forming a paved and planted courtyard.

At ground level there will be a number of shop units. It is intended to set up the reinforced concrete frame on pile foundations. Main elevations will have marble cladding to the columns and full height curtain walling with triple glazing for all office areas.

The third part of the contract involves the renovation of 30 dwellings within housing section areas and covers the second phase of the project in North Manchester.

## Modernising Manchester

PREWAR DWELLINGS in Barlow Moor, in the southern sector of Manchester city, are to have repairs and improvements under part of a contract worth £1.7m awarded to John Lains Construction. Work has already started on the 180 houses and 28 flats in this area.

In neighbouring Burnage, work has started on the first phase of the Catterick Hall Improvement Scheme which involves the refurbishment of 94 houses.

The third part of the contract involves the renovation of 30 dwellings within housing section areas and covers the second phase of the project in North Manchester.

## Leicester station facelift

NEW PLATFORM buildings and awnings are included in the facelift for British Rail's Leicester station under a £1.2m contract awarded to Sir Robert McAlpine and Sons.

The station was built in the 1890s by the Midland Railway and was known for many years as Leicester London Road. In recent years the amount of accommodation has far exceeded the present requirements and major maintenance problems have arisen.

Demolition of the buildings on platforms 3 and 4 (the London departure platforms) has already taken place and the company is to provide new waiting, buffet and toilet facilities, together with a bookstall, and essential accommodation for rail staff.

Upon completion of the work, the old buildings on platforms 1 and 2 will be demolished and similar new facilities provided there.

## £2m awards to Bovis

TWO CONTRACTS, together valued at about £2m have been awarded to Bovis Construction by City and Continental Property Group.

One is for a major reconstruction and upgrading of Calder House, on the eastern corner of Dover Street and Piccadilly, London, W.1. Existing facades on to Dover Street and Piccadilly are to be retained and integrated with a completely new structure. This will provide 2,250 square metres of modern offices on five floors, together with a pre-let shop unit at ground and mezzanine levels. In addition, there will be a basement night club.

When the facades of Calder House are secured the remaining structure will be demolished and replaced by a modern steel frame building with a slightly extended second floor and a similarly enlarged roof area, which will incorporate new plant rooms. Once the frame has been completed, new floors will be constructed from the top of the building down and a lift will be installed. The other contract is for a five-storey shops and offices development at The Parade, Regent Street, Leamington Spa. Designed to harmonise with the regency character of the area, the reinforced-concrete structure will provide three floors of offices over ground floor shop units and basement stock rooms. The external facade will be of ashlar stone block, with tinted glazing.

The shop units are programmed for completion by December 1979 and the office areas will be handed over in March 1980.

## Fairclough in Anglia

THREE contracts worth more than £3m have been awarded to Fairclough Building. The largest project, valued at £1.8m, is for the construction of 150, one, two and three-storey housing units at Orton township for Peterborough Development Corporation.

Work has started on a £1m two-storey extension to the Colchester Maternity Hospital for

the North East Thames Regional Health Authority, and the third project is the construction of new Crown Courts at Romford for the London Region of the Property Services Agency under a £750,000 scheme.

## Mowlem job for Shell

THE BUILDING and civil engineering work for a bitumen complex at Shell Haven Refinery, Essex, valued at £1.9m, has been awarded to John Mowlem and Company by Shell UK Oil.

Work there covers the installation of ground works and reinforced concrete foundations for a bitumen plant and the building of a reinforced concrete structure. Other works include the construction of a control room, switch house and concrete paving. Shell will supervise the work. Quantity surveyors are Stern and Woodford. Work has just started and completion is due in autumn 1980.

## Performance of wood windows

BECAUSE THE present British Standard 644 for wood windows has been in existence for over 20 years, the British Woodworking Federation has produced a four-page document, "Technical Criteria for Wood Windows". Its purpose is to aid specifiers and timber window users to bridge the gap until a new series of standards for dimensional performance and other characteristics is issued. Copies from the Federation at 82 New Cavendish Street, London

## Finns build Cairo hotel

A LUXURY hotel is to be built in the Cairo suburb of Giza by two Finnish contractors, Urakotsij Oy and Makrotalo Oy, which together form the new contracting group Arab-Finn Contractors. El Shams Pyramids Co. is the Egyptian partner.

The hotel will have 156 rooms and will be managed together with El Shams, by Holiday Inns of the U.S.

Total value of the contract is more than 50m Finnish marks (over £8m). Work will begin before the end of the year and the construction period will be 18 months.

## Heats open areas

WHERE intermittent heating is required in large open areas, particularly in the construction industry and by associated trades, three industrial air heaters are

suggested by Wysepower, Drove Road, Everton, near Gamlingay, Sandy, Bedfordshire, SG19 2HX (0757 50011).

These are rated at 200,000, 300,000 and 400,000 BTU's per hour respectively, are mobile and said to be easy to move from location to location.

Apart from heating in factory work, warehouse, storage areas and localised open spaces, the company says the space heaters should also be suitable for application in the agricultural, aviation and marine industries.

The figures for the work, which will have a large civil engineering ingredient, are in 1978 dollars. This suggests that if one accepts dollar deflation as running at about 7 per cent per year, cost for the decommissioning work in 2008—earliest date at which the plants would be taken out of service—would be \$360m. In 2018, with a lifespan of 40 years, the plants would take \$720m to render harmless.

What the utility is doing is setting aside 1 per cent of revenue—now running at about \$808m—against decommissioning costs. It is also seeking rate reliefs and proposes to meet these future very large charges by transferring the money to a trustee to "invest in tax-free securities."

At an input of \$21m a year, the interest yield would have to be untaxed to produce anything like the amount needed. This may be possible under U.S. arrangements. The question remains whether it would be so in Britain or Europe.

Metropolitan Edison Company, Unit 1 (819 MWe net) and Unit 2 (806 MWe net) the latter not

## Costing the burial of the atoms

MUCH CLEARER ideas of what it will cost ultimately to make safe obsolete nuclear power stations have recently been provided by the American utility Metropolitan Edison Company.

This organisation estimates that for its Three Mile Point Unit 1 (819 MWe net) and Unit 2 (806 MWe net) the latter not



Nelson signalled England's expectations well after Trollope and Colls had arrived.

Trollope & Colls  
City Builders  
for 200 years  
1778-1978

## Detailed look inside

ALL THE components of a pipe inspection closed circuit television system introduced by Rees Instruments will fit into an executive attache case for easy transport to site.

The camera is housed in a waterproof (to 70 metres) case 40.5 mm in diameter and 287 mm long. Resolution from the 1 inch vidicon is 600 lines and the sensitivity is sufficient to produce a useable picture at less than five lux illumination. The camera can withstand a total absorbed radiation dose of a hundred-million rads (gamma 100 per cent).

Variable iris control between £2.8 and £16 is provided from the control unit and there are similar controls for focusing (down to about an inch) and for rotation of the 45 degree mirror unit which when in use allows detailed wall inspection. Angle of view is 53 degrees.

With the forward looking head an annulus of light bulbs round the lens provides illumination, although the alternative of a forward mounted, very bright quartz iodine lamp is offered.

Very long pipe runs can be inspected because the standard size cable can be used in lengths up to 400 metres without external adjustment.

The control unit, which has its own three inch monitor tube measure only 240 x 95 x 330 mm and the weight is 5 kg.

More about the equipment, called R93, from the company at Westminster House, Old Woking, Surrey (Woking 62321).

## Second skin saves heat

TWO SWISS companies have produced a system for the insulation of existing buildings, resulting in big savings in heating costs. The system consists of wrapping the construction in a sort of "second skin" made of glass fibre and a mortar-based adhesive mass, itself strengthened with a woven reinforcement. The double wall thus formed produces the same effect as that obtained in vacuum flasks.

The advantages of this new process are many: possibility of insulating old buildings whose facades can be renovated at the same time; no reduction in living space; preservation of the appearance of the facade desired by the architect.

This process pays for itself within three to four years through the savings made in heating bills.

Fibriver, Ch. de Morinex, 3 Case postale, CH-1001 Lausanne, Switzerland.

## Importance of cladding

TWO KINDS of defects in cladding cause particular concern: rain penetration and dislodgement. If the defects are not rectified when warning signs appear, further deterioration is likely. Because diagnosis of potential dislodgement of cladding "made of public ways is particularly important, a new Building Research Establishment Digest has just been published to give guidance on how to spot latent defects likely to lead to these problems.

Copies of "Wall cladding defects and their diagnosis" are available (12p each plus postage) from HMSO, 49 High Holborn, London, WC1V 6RC.

## Shutters cut heat bill

ALTHOUGH SHUTTERS are generally used in Continental countries as a barrier against winter sun, they also serve in the winter months as effective insulators.

The Georgians used high wooden shutters against wide, deep windows in English country houses and the use of these, or heavy velvet curtains, have traditionally been the solution to keeping the warm in and the cold out.

Internal shutters are surely the answer, says a British company, Guardia Shutters, Gallery House, 90 Dunstable Street, Ampthill, Bedfordshire (0225 404709). Its "Shutblinds" are vertical louvers made in robust, ivory white PVC. They can be adjusted to keep out the cold intruders.

Another advantage: from the inside when they are locked shut at night is that they serve as an effective deterrent to would-be intruders.

through. When they are not in use, they fold back on the ledge behind the curtains.

Apart from the obvious benefits of keeping the warmth inside a room, these indoor shutters also shut out noise and light, a special bonus for people whose work forces them to sleep during the daytime.

The insulating shutters can be drawn for 16 hours out of 24 in cold weather (when occurs the greatest heat loss), but even if left open at windows facing the sun, solar gains can more than offset day-time losses, even in winter, says the maker.

Another advantage: from the inside when they are locked shut at night is that they serve as an effective deterrent to would-be intruders.

## IN BRIEF

● Jarjay Industrial Developments (part of Jarjay Group of Stockport) has signed a joint agreement with the Essex County Council to develop an estate of mixed industrial units forming part of the Council's new Riverside Town at South Woodham Ferrers, near Burnham on Crouch. The development contract is worth £21,000.

● A contract for 1,400 tonnes of structural steel valued at £0.7m for the aluminium smelting plant currently under construction in Dubai has been awarded to S. W. Farmer Group.

● The window contract on the Midland Bank's new £30m computer complex at Wentworth, near Sheffield, has been won by H. A. T. Glass of Bristol.

● The High Wycombe based materials handling equipment specialist, Sambron, is to change its marketing policy and sell only through dealers in the U.K.

● A contract worth £1m to fabricate and install 370 tonnes of pipeline at St. Mary's Lock, Catterick, Selkirkshire, part of the Megget Scheme by the Lothian Regional Council, has been awarded to Robert Watson and Co. (Construction Engineers) of Bolton.

● Final stages have now been reached in the construction of the Cambridge/Ramington A604 pipeline diversion scheme which Biggs Wall and Co. is carrying capital of Iraq.

● Phase two of the approach channel to Dubai's new port at Mina Jebel Ali is to be marked by a British-made buoyage system of 19 steel light buoys supplied by AGA Navigation aids, Brentford, Middx. Equipment will be to the same specification as that for phase one, using bifilament electric buoy lights.

● Haiste and Partners, consulting engineers of Leeds, has been commissioned to prepare an evaluation of domestic water treatment and distribution facilities in Samarra, former capital of Iraq.

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## Businessman's Diary

## UK TRADE FAIRS AND EXHIBITIONS

Date	Title	Venue
Current	Improve Your Home Exbn. (closes Oct. 23)	Olympia
Current	SMMT Motor Show (closes Oct. 29)	National Ex. Centre, Birm'm
Oct. 24-25	Electronic Instruments Exbn.	Post House Hotel
Oct. 24-26	Environmental Health Exhibition	Bournemouth
Oct. 24-27	European Offshore Petroleum Conference and Exhibition	Southampton
Oct. 24-27	London Fashion Exhibition	Earl, Court
Oct. 24-27	London Business Equipment Exhibition	Olympia
Oct. 25-27	Management Services and Equipment Exhibition	Guards Int'l. Hotel, W6
Oct. 30-Nov. 3	Midland Metal Sawing and Tube Working Machine Exhibition	Exhibition Centre, Harrogate
Oct. 31-Nov. 2	Equipment and Machinery Demonstration: Labels and Labeling	Addison Exbn. Centre
Nov. 1-2	EIA Engineering Exhibition	Willenhall
Nov. 3-5	Furniture Preview Show	Clothing Technology Centre, NW4
Nov. 6-10	Electrical Engineering Exhibition	Watford Leisure Centre
Nov. 7-9	Fluid Handling Exhibition	Olympia
Nov. 13-18	Public Works Congress and Exhibition	Belle Vue, Manchester
Nov. 13-18	ENPOCON—Environmental Pollution Control Exhibition	Harrogate
Nov. 13-18	TASSEX 78—Transportable Accommodation and Site Services Exhibition and Conference	National Exbn. Centre, Birmingham
Nov. 13-18	EWT—Effluent and Water Treatment Exhibition and Convention	National Exbn. Centre, Birmingham

## OVERSEAS TRADE FAIRS AND EXHIBITIONS

Date	Title	Venue
Current	International Ladies' Ready-to-Wear Exhibition (closes Oct. 23)	Paris
Oct. 24-29	International Oil & Trade Fair	Colonne
Oct. 25-29	World of Investment '78	Los Angeles
Oct. 28-Nov. 12	SNOW 78—Sports, Winter and Recreation Show	Basle
Oct. 29-Nov. 30	INTERPEL—International exhibition of Leather and Travel Articles	Dietikon
Oct. 30-Nov. 3	Electronics Trade Fair	Amsterdam
Oct. 31-Nov. 4	IFAS—International Trade Fair for Medical Supplies	Zurich
Nov. 3-8	International Book Fair	Beograd
Nov. 7-11	International Sheet Metal Working and Forming Exhibition	Esson
Nov. 8-17	British Industrial Exhibition	Mexico City
Nov. 11-19	International Hotel, Tourist Equipment and wines, spirits and beverages exhibition	Geneva
Nov. 13-18	International Packaging Exhibition	Paris
Nov. 13-18	International Food Manufacturing and Processing Exhibition	Paris

## BUSINESS AND MANAGEMENT CONFERENCES

Date	Title	Venue
Oct. 24	CEI: Developing Countries—Targets for the '80s	CEI, Tottill St., SW1
Oct. 24	Conference Board in Europe: Intl. Financial and Economic Outlook Conference	Brussels
Oct. 24	Benn: "Company Secretary's Review"—Conference	London Press Centre
Oct. 24	ESC: Rewards for Inventors	Wembley Conference Centre
Oct. 24	AGB Conference Services: Trade Union Recognition—due Options	Piccadilly Hotel, W1
Oct. 24	Institute of Purchasing and Supply: Rubber and Allied Materials—into the '80s	Grosvenor House, W1
Oct. 24-25	ASM: Capital Project Evaluation	Cafe Royal, W1
Oct. 24-26	RRG: Effective Risk Management Course	Copenhagen
Oct. 25	London Chamber of Commerce: Middle East Transport	69 Cannon St., EC4
Oct. 25	Economic Models: Paper Forecasts for Europe, U.S., Canada, Japan	30 Old Queen St., SW1
Oct. 25	Thames Polytechnic: Conference on taxation to assist businessmen, professionals and accountants	Wellington St., SE18
Oct. 25	Inbucan Group: National Policy and Pay—Seminar	Dorchester Hotel, W1
Oct. 25-26	ASM: Computer-Aided Project Planning and Progress	Cafe Royal, W1
Oct. 25-26	BIOS: Seminar—Economics for the Manager	Brunei University, Uxbridge
Oct. 25-27	Institute for International Research: 1978 Corporate Finance Conference	Piccadilly Hotel, W1
Oct. 25-27	Danish IAG—IAG: Conference on Computer Impact	Copenhagen
Oct. 25-27	AMP International: A Practical Approach to Data Processing for Non-DP Executives	Brussels
Oct. 26	Centre for Advanced Land Use Studies: Setting up a successful Development Partnership	Cafe Royal, W1
Oct. 26	Institute of Purchasing and Supply: Developments in the Food and Drink Industry	Kensington Close Hotel, W8
Oct. 26-27	British Council of Productivity Associations: Workshop on Unfair Dismissal	Waldorf Hotel, WC2
Nov. 7	Institute of Marketing: Sales Letter Writing	Royal Horseguards Hotel, SW1
Nov. 8	British Franchise Association: Seminar—The Business Format Franchise	Cafe Royal, W1

## APPOINTMENTS

## JCT's new chairman

Mr. Norman Royce has succeeded Mr. P. H. P. Bennett as chairman of the JOINT CONTRACTS TRIBUNAL for the standard form of building contract. Mr. Bennett had accepted his appointment in January 1973 on the understanding that he would be able to relinquish it after five years.

Rubcock Contractors has made the following appointments to the Board of RUBCOCK ELECTRICAL PROJECTS: Mr. T. H. Kindersley (chairman), Mr. T. H. Bowen, Mr. J. H. Adams, Mr. P. J. Harris (managers), Mr. A. G. Poole (technical) and Mr. H. Peters (marketing).

STEYR-DAIMLER-PUCH has appointed Mr. Neville Clay international marketing manager. He will be responsible for co-ordinating and planning the activities of Puch's various subsidiary companies.

Previously Mr. Clay was marketing director with the Crown Wallcoverings division of Crown Decorative Products.

Mr. J. C. Hodges and Mr. N. A. Gardiner have been made directors of RAILCO, the BBA Group Company manufacturing plastic bearings for locomotives. Mr. Hodges, sales and engineering director, has been with the company since 1962. Mr. Gardiner, research director, is responsible for research and development of new materials, their manufacturing processes, patents and licensing. He also joined the company in 1962.

Mr. Paul Rawlin has been appointed a director of ATCOST HOLDINGS parent company of the Atcost Group, Tunbridge Wells. He has also taken over the position of managing director of ATCOST PROJECTS, a trading company within the group which specialises in large industrial steel concrete composite structures.

Mr. R. D. Atkin has been appointed managing director of ATKIN RAGGETT, insurance brokers.

Mr. John M. Connolly has been appointed managing director and Mrs. L. P. Connolly, director and company secretary of SCORGEN, of Yateley, near Camberley.

Mr. James W. Downer has been appointed sales director of RANK FILM LABORATORIES with overall responsibility for the marketing and sales operation.

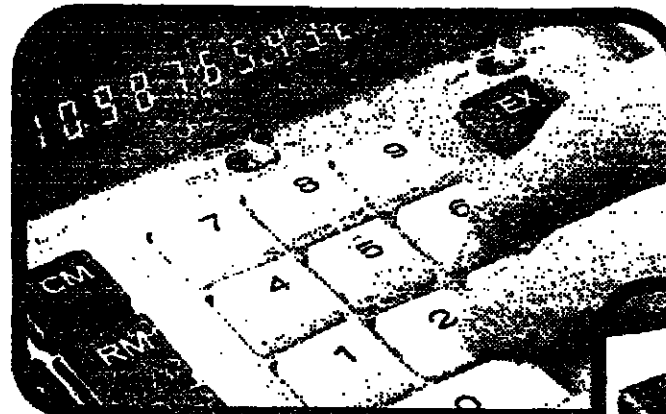
## BADGES

## ALL TYPES IN MOST MATERIALS

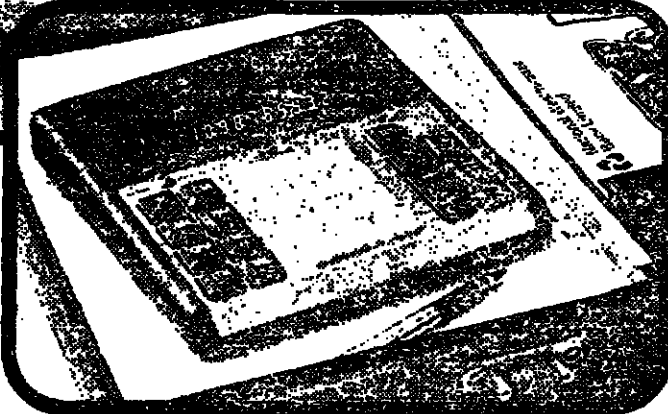
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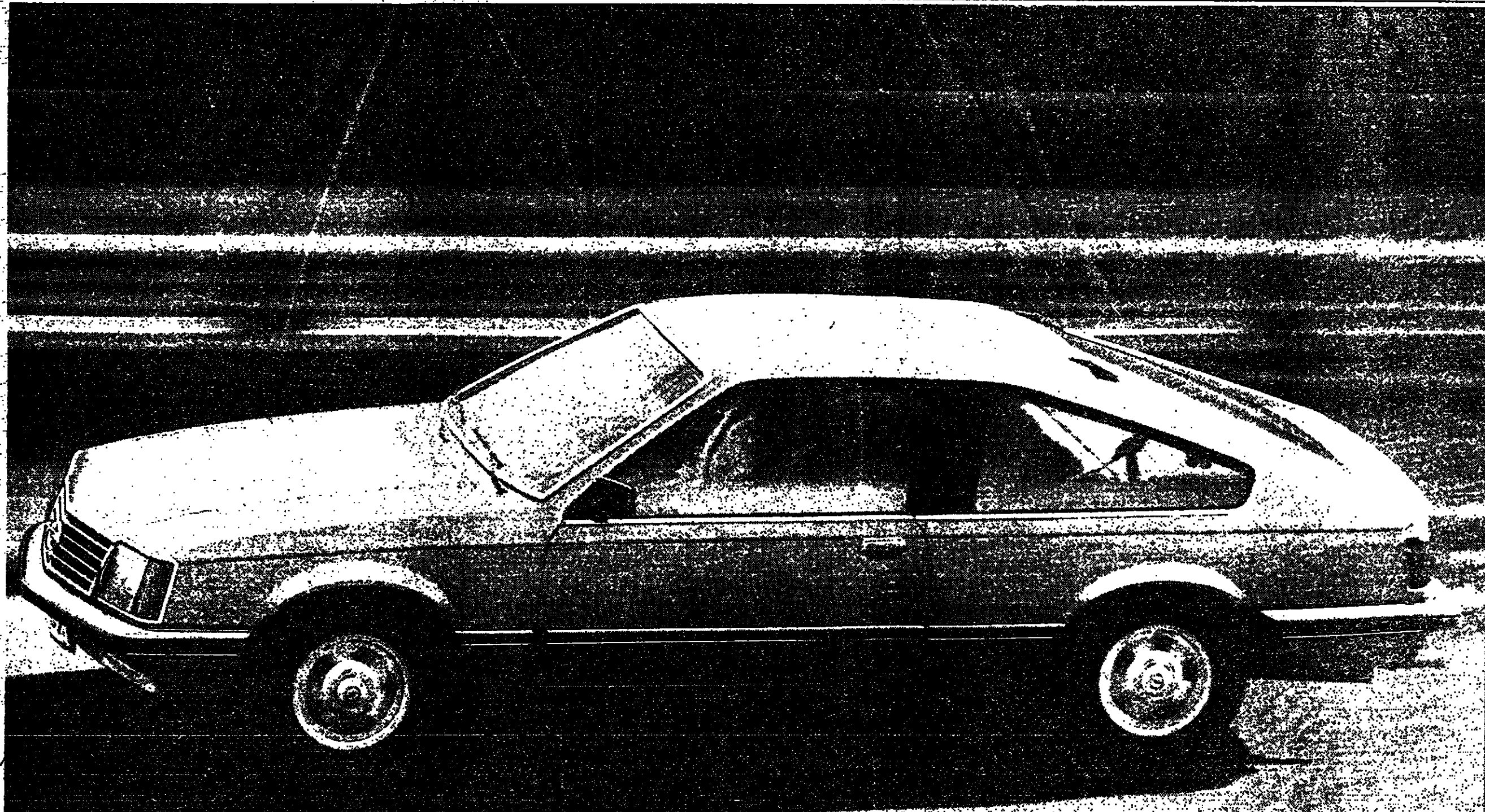
The Brinlock 106—and the whole outstanding Brinlock range of calculators from 58.95 Pocket Calculators to 270.00 Printers, available now from your office equipment suppliers—or send the coupon for information and list of stockists.

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Frankly the Monza will never be one of the most familiar sights on British roads. It's more performance than you probably ever need and in terms of luxury and creature comforts it's obviously a car for the man who has approached what he's buying as a challenge and can afford the best. We don't call the Monza a supercar because it's really that much better than the rest. It's a car that's been designed to give you 133 mph and 0-100 in 8.5 seconds.



It's really comfortable with seats and floor panels lined with velour, deep carpets and with ample room for 4 forget the 2+2 use Monza as a different class. It's very reliable thanks to Daimler-Benz's typical German preoccupation with quality engineering. Above all, the Monza is a car where you have a choice of manual or automatic transmission and of course power steering. There's an adjustable steering wheel, central door lock, a stereo, electrically operated windows, sunroof and alloy wheels.

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**MONZA**



# Technical Page

EDITED BY ARTHUR BENNETT AND TED SCHOETTERS

## COMPUTING

### Speedy unit by Amdahl

AMDAHL DEVELOPMENTS are. The V/8 level of performance means very quickly and so can be achieved simply by its processors. The machine cycle upgrading the V/7 in situ with time of the V/8, latest unit in virtually no interruption to customers, being as fast as 26 tomers' operations.

Among recent buyers of V/7 machines are British Airways which will be immediately predecessor, the V7, pleased to know that two of the units to be offered in 4 Mega- already in and working—one at Western Electric in Illinois and by the other at Union Planters Bank, Memphis, Tennessee.

At the same time, Amdahl has memory and disc storage. This upgraded its V5 in performance buffer will also have a "pre-fetched" instruction mode under which it will predict the most Amdahl (UK), 29-31, Lamp-logical consecutive data to be ton Road, Hounslow, Middx, called in from storage. TW3 1JD, 01-573 4312.

### Memory move for power

FURTHER enhancements to its 2900 Series of computers announced by ICL indicates that by some time next year it may have moved over to powerful solid-state main memory based on 16K chips for the whole line.

A new mid-range processor, the 2956, is introduced together with the new DME/2 operating system, to enable users of the ICL 2903 range of computers to transfer workloads direct to either ICL 2956 or 2950 computers. In addition to DME/2, the ICL 2956 computer supports the VME/K and DME/3 operating systems.

The 2956 offers significantly more power than a 2950 and fits between that system and the 2980. The 2956 employs a compact store technology incorporating 16K bit chips, which means up in value, with power, to about £200,000, would grow easily to a small 2950 at around £300,000. Any speculation as to whether a 2940 is in the wings thus appears to be laid to rest.

## RESEARCH

### Why metals suffer in hydrogen

A MODEL held in a computer, that could significantly increase understanding of the important technical problem of metal failure due to hydrogen embrittlement—and may ultimately aid in the design of metals more resistant to failure—is being developed at Battelle's Columbus Laboratories.

In a three-year study sponsored by the National Science Foundation, Battelle staff are constructing a simulation model capable of describing the behaviour of individual atoms within a metal crystal. The model will be used to determine the manner in which hydrogen embrittlement is brought about by atoms of hydrogen dissolved within a metal.

Embrittlement, which affects many metals, is the loss of ductility when the metals are placed under stress in the presence of hydrogen.

Understanding of the causes of hydrogen embrittlement is still far from complete, even though it has long been a severe problem. But the model will help to determine the complex arrangements of hundreds of atoms around a damaged portion of a metal crystal.

It will be possible to evaluate the behaviour of a defect such as a crack under the action of an applied stress and in the presence of foreign atoms such as hydrogen. A direct link between what happens at the atomic level with what is observed macroscopically can then be drawn, providing a much more comprehensive picture of the manner in which hydrogen affects metal.

Battelle, Columbus Labs, 505, King Avenue, Columbus, Ohio 43201, U.S.

## OFFSHORE INDUSTRIES

### IZE under the sea

SUB SEA SURVEYS, with financial assistance from the National Research Development Corporation (NRDC), has designed and built a small remote-controlled unmanned submersible.

This is the first remote controlled vehicle (RCV) totally designed and built by a specialised RCV operating company. Sub Sea Surveys is the established world leader in the operation of large survey and inspection RCV's—says NRDC—and the company has used its extensive knowledge and experience.

In the new mini-design, IZE, as the vehicle is named, will be on show for the first time at the EUROPEC Offshore Exhibition at Earls Court on October 24 to 27. It has been developed to satisfy the requirements for a low-cost machine that incorporates ease of operation with high reliability and excellent serviceability.

Based on a tough monocoque frame, the vehicle has dual purpose cylinders to provide buoyancy and house the electronics systems. Only 30 per cent of the available space will be used, leaving 70 per cent for additional

## PROCESSES

### Dense and strong surfaces

COATINGS OF almost any metal, alloy, carbide or ceramic can be applied by a process known as plasma flame spraying and may, for instance, be used on lightweight, inexpensive or easily fabricated components.

Another application is in the rebuilding of surfaces that have become worn or of parts that are under size through wear or an error in machining.

A new generation of plasma spray equipment for this type of work known as the Type 7M System, is now available from METCO. The latter claims reliable operation at increased power levels, with optimum coating quality at high spray rates.

High energy, plus improved thermal transfer efficiency within the new spray gun allows gas exit velocities which impart very high velocity to the spray particles, says the company, and this combination of thermal and kinetic energies produces deposits which are unique to the high energy plasma flame spray process. Dense, strongly bonded coatings result. Surface coatings as thin as 0.002in can now be applied where service conditions permit.

Coatings applied by this latest system have high substrate bond strength, and they are relatively smooth as sprayed so that only a minimum of finish machining is required. Close control of thickness is maintained by mechanically handling the spray gun and workpiece so that for some applications coatings can be used without finish machining.

Extension equipment is also available for applying the plasma-spray coatings to internal diameters. The standard unit will spray into bores down to 2 in (50mm) diameter for a depth of about 7 in (178mm) and about 24 in (700mm) deep in bores over 3 in (76mm) diameter.

Plasma coatings have a variety of applications from production and subsequent routine maintenance of jet engine components to pumps handling abrasive slurry. The new high energy plasma spray system giving the facility in combining surface characteristics of one material with a base material having other attributes allows a new flexibility in design for components with improved performance yet costing less to make, asserts METCO. Details of the new system are available from METCO at Chobham, Woking, Surrey (Chobham 7121).

### Gas blast silenced

ALPHA ACOUSTICS of High Wycombe has designed and supplied what is probably the largest atmospheric vent silencer in the UK for the North Sea gas terminal at Bacton. The silencer, intended for use in an emergency, allows the safe discharge of gas contained in the pipeline within two to three minutes.

Natural gas enters the terminal at a pressure of 1,100 psi and should the terminal be unable to accept the gas, for any reason, it is necessary to vent the entire contents of the pipeline to atmosphere as quickly as possible.

Complete discharge of the pipeline within two to three minutes creates a peak gas flow of 1m cubic feet per minute. The noise level under these conditions was calculated to be in excess of 155 dB(A) at a point ten feet from the discharge vents. This is considerably above the threshold of pain, 130 dB(A), and could cause serious, possibly fatal, injuries.

While high levels of noise can be accepted for short periods in extreme emergency, possibility of injury to personnel could not be tolerated. To eliminate this

possibility, a vent silencer was to be fitted to reduce the noise level at ten feet, the closest approach distance, to 115 dB(A) and at 1200 feet, the nearest private dwelling, to an acceptable environmental level.

The high pressure and large flow rates involved meant that vent silencers using conventional technology would have been too large to be practical.

Alpha Acoustics used two-stage construction consisting of an expansion chamber followed by a sound absorbing section. The chamber is a reinforced concrete and brick stack measuring 30 x 3 feet in section and 30 feet high, containing two gas diffusers designed to reduce inlet turbulence, allowing even expansion of the gas prior to discharge through two staggered banks of sound absorbent splitters mounted in the top of the stack.

Under test, this silencer system provided attenuation in excess of 45 dB(A) resulting in residual levels considerably below the original design criteria. Alpha Acoustics, Hill Bottom Road, Sands Industrial Estate, High Wycombe, Bucks. 0494 36345.

### Weld tests under water

A QUICKER method of testing steel structural members under water using a contactless magnetic induction technique has been introduced by Star Offshore Services Group.

Called Gascomag, the system has been approved by Det Norske Veritas after extensive trials and has also been selected by Conoco for use in its 1978 certification inspection surveys.

Based on similar equipment developed by Inspection Instruments of London to Gas Council designs, Gascomag does away with direct magnetisation of the member using low voltage high current probes and uses instead a loop of wire wrapped round the member through which currents up to 1800 amps at six volts are passed, inducing the necessary field into the steel. Fluorescent ink is then sprayed by the diver on to the steel, with prods so that there is no danger of promoted cracking, copper inclusion or local pitting.

The company states that just one coil position is usually adequate to magnetise a com-

## INSTRUMENTS

### Tests for breakdown

PORTABLE AND compact, a newly developed leakage and breakdown tester from Avo can be used for general flash testing work, for the measurement of breakdown voltage, and for determining leakage current in electrical components and systems.

Designated RM215-F/3, the equipment operates from the mains and will provide a continuously variable AC test voltage between 50 volts and four kilovolts. The unit is sensitive to current passed by the component under test and can be adjusted to operate in either leakage or breakdown mode.

An interlock ensures that when a component fails under test, the voltage is removed. Avo is at Archcliffe Road, Dover, Kent CT17 9EN (0304 202630).

## EXHIBITIONS

### Commercial vehicle advances

A LIGHTWEIGHT Taskip body mounted on a Leyland Octopus eight-wheeler chassis was unveiled at the International Motor Show in Birmingham by Craven Tasker (Woodville), who says that the new development has been made to reduce the tare weight and thereby increase the payload for operators in the aggregate field where a limited height for the body is about four feet.

Also on view is the company's multi-axle 100-ton transporter model shown. Group member Reynolds has been designed so that the overall capacity can be increased by adding similar modules to vehicle which has been designed

to meet both civilian and military applications. Scotland Trailers is showing its mobile workshop which is equipped to service and complete all maintenance and general repairs to vehicle fleets and plant operating far from support facilities.

A 14-ton version of the Bushmaster trailer—the largest powered axle version ever manufactured by the company—is also on show fitted to the RB 44 vehicle.

To be seen for the first time is the Benne Marrel Ampiroil 160/24 handling system mounted, in this instance, on a Leyland Eylon 24-ton GVW chassis. This system can be automatically controlled by a driver who never needs to leave his cab. It will carry containers up to 40 cubic yards in capacity.

## MATERIALS

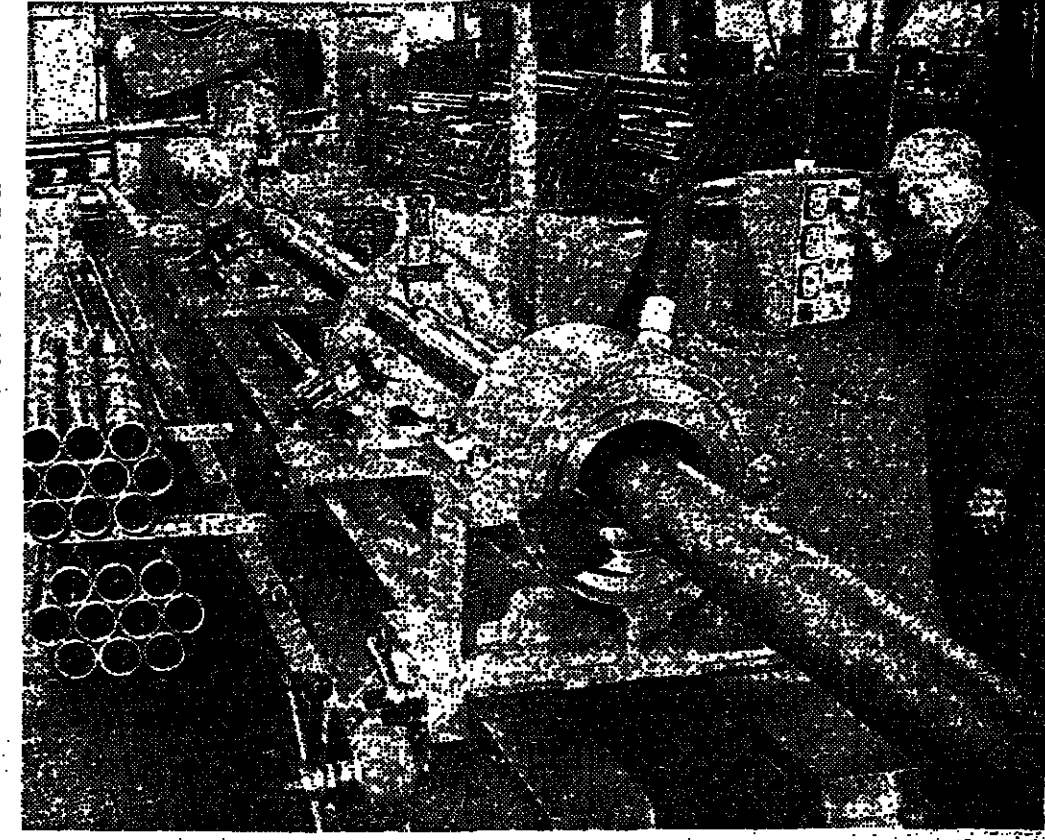
### Floors made good in half an hour

ONE OF the greatest problems in repairing floors in high production factory areas or busy cold stores, particularly in the meat and food industries, is that there may be a series loss of production due to the time lost while waiting for the repaired surface to cure.

There is now on the market a repair material, based on a special resin mix, which can be accelerated to cure within 30 minutes of application at normal room temperature to give resistance to foot traffic and most oils, fats, foods and chemicals. Such repairs can now be carried out without having to raise temperature or interrupt normal operations in any way. This resin based flooring, known as Reinsauquik B, is also taint free and, within less than three hours of application develops a load bearing capacity. Says the maker, Th. Goldschmidt, Initial House, 150 Field End Road, Eastcote, Middlesex, HA5 1SA (01-988 1331).

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Boring out the centre of a hydraulic cylinder by a skiving and burnishing technique is being applied here by a new £120,000 machine capable of running work on tubes

up to six metres in length and 300 mm in diameter. Tube boring (Chertkoff) is operating this machine, believed to be the only one of its scale and capacity in the UK for such sub-contract work. (0608 52386)

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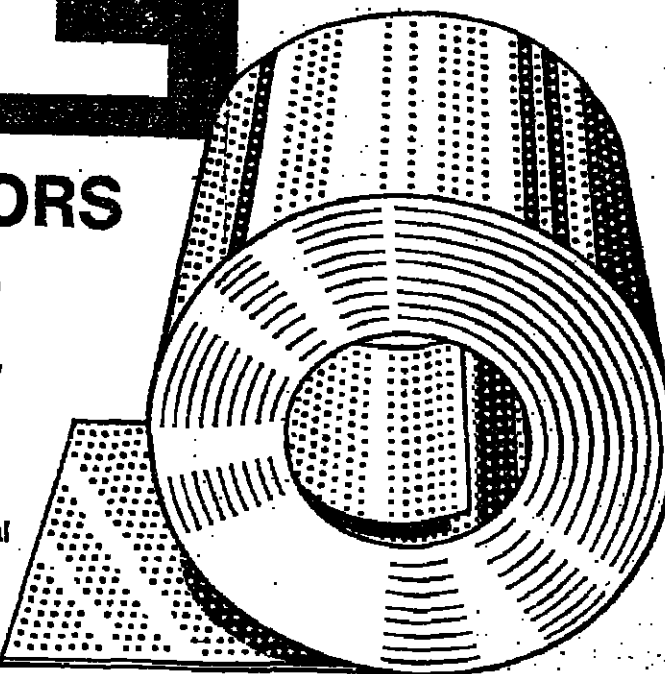
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## The Executive's and Office World

EDITED BY CHRISTOPHER LORENZ

## Why Watney is putting its managers through the hoop

BY JASON CRISP



Roddy Pryor: personnel director of Watney Mann and Truman Breweries Group

LANY companies are fond of discussing the benefits of management development — even though it may be difficult for them to follow through and measure the gains.

For instance, Watney is spending £100,000 a year on a system of management development which may sound a reasonable idea, but to prove the tangible benefit of it is not easy.

Why Watney should be concentrating on developing its management skills has a lot to do with its turbulent history, even years ago the company dominated the headlines in a long and acrimonious saga which eventually led to its takeover by Grand Metropolitan. Although the takeover may have disappeared from the headlines, the repercussions of that difficult change continue many years later.

It is easy to underestimate the problems any company faces in advancing the ideas of its management; and not least a company — which has seen a number of changes, not all of them welcome. This is why management development at Watney Mann and Truman Breweries group has been both necessary and complex.

Before the takeover Watney was run on a very centralised basis; as one manager put it,

"you could not cough in the regions without head office permission." The upheavals which have led to a very changed company first started in 1971 when Grand Met bid for the then independent Truman breweries. Watney swiftly counterbid and after a long battle through the summer Grand Met emerged as victorious.

Hostilities resumed the following year when Grand Met went for Watney itself and after another lengthy siege it succeeded in what was virtually a reverse takeover bid.

## Merger

There was considerable internal opposition within Watney to the Grand Met bid — and here has it that puts bare slogans like "Keep Watney's Watney's". In late 1973 Watney Mann was merged with Truman and the group was divided into two sections: brewing and distilling, and retail outlets — that is, the pubs.

It is not difficult to see that Grand Met faced a serious management problem within its brewing interests; not least because of disparate interests and unclear loyalties.

A new era of cohesive management style did not dawn until October 1975 when Allen Sheppard was appointed chief

executive. He was the first non-brewer on the board and came from the car industry to a company which, reflecting the internal disaffection, had lost a considerable amount of top management staff. His arrival did not halt the departures.

It was clear that in terms of management development Watney's problems were far from common. It had the opportunity of recruiting and promoting a new management team, and it was able to devolve the old centralised structure into regional units. But inevitably this meant that management was not particularly cohesive or unified.

The responsibility for overcoming these problems was given to Roddy Pryor, a former scientist with Trumans, who Allen Sheppard made personnel director with the specific task of proposing a management development programme.

Pryor explained why the company needed to change both its management structure and the particular needs for management development: "I don't think we could have carried on running Watney as a colossus. It was not very efficient in the old days. We decided it would be better for motivation and management if we went for regional groups."

The object, says Pryor, was to

introduce a participative style of management which has the advantage of being uniform in each of the regions. His search for suitable management training/development courses was wide and included Action Centred Leadership, T-Groups and management by objectives.

Pryor finally plumped for taking a week long course at Coverdale and came back thinking he had been conned: "It was so good."

Coverdale training has had a high degree of success and is expanding rapidly; it has been adopted by a number of well known organisations. The biggest criticism from academic circles studying management and organisation development is that it has not been evaluated satisfactorily rather than any specific criticism.

It was devised in the late fifties by the late industrial psychologist, Ralph Coverdale, along with Bernard Babington Smith. It was first used by the Steel Corporation of Wales and by Esso. In 1965 Coverdale started his own consultancy, with Esso as one of his first clients.

Very broadly the Coverdale method teaches people how to work constructively within a group and how to use their skills co-operatively with other people. The emphasis is on problem-solving, and the

normal training consists of courses taken with people from other organisations. Usually these last five days and are not held at the place of work; with the help of a trainer groups learn how to work together to solve problems. It is strictly practical rather than just listening to lectures.

Alan Sharp, who is the Coverdale consultant concentrating on Watney explained recently in a paper what he expected to see happening in an organisation where the method was being used.

## Pitfalls

His six points were, briefly: Top management is actively involved in the planning, steering and monitoring of overall strategy; objectives for the development of an organisation are set, reviewed and updated in the light of experience; sufficient members of management are trained so that lessons learned are used in practice; there is sufficient follow up training; certain managers are trained to a high enough level to do without external support; there is continuous monitoring.

After his own experience on a Coverdale course, Pryor spent a month talking to other organisations which had used the method to find out the

problems and the pitfalls. From this and also from talking to Coverdale he decided on a number of vital considerations.

First, was that any training should start from the top — with the chief executive — and work down. Second, the whole scheme would lose its value if anyone is mis-educational while working through the organisation. Third, the training needs to be reinforced at work; the whole process is a long slog lasting perhaps five years, and finally there is a need to coach people to apply what they have learned on their courses.

After writing a paper and persuading the Watney Mann and Truman Brewery board that Coverdale was the right form of management development needed, Roddy Pryor made it

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## Waving the British goods flag in France

IT'S AN extraordinary sight — Frenchmen eating haggis on a embassy lawn — but they seem to get on better with it than they would with their own.

So comments Sir Nicholas Henderson, Her Majesty's Ambassador in France, who has made the embassy premises in the fashionable Faubourg St. Germain a focal point for a major push of British goods to the French market.

"What too few British manufacturers realise," he goes on, "is that France is now the fifth largest industrial country in the world and has overtaken the U.S.A. There are enormous opportunities virtually on our

doorstep. We get people coming here who still talk in terms of France being purely agricultural."

Some British managements, however, have seen the light. In 1973, exports to France were valued at £300m. By the end of next year, Sir Nicholas is confident they will have reached £3,000m. "But," he warns against complacency, "that will still only be about 5 per cent of the market, while the Germans command over 18 per cent. This underlines how important are

the non-price factors in selling here. After all, in the 1970s, the Deutsche Mark has risen in value against the French franc by 42 per cent, while the pound sterling has fallen by 37 per cent and still Germany has maintained its market share."

Sir Nicholas will be giving a speech at a British Overseas Trade Board Export United conference, at the London Hilton on October 26. His message is that great success can be achieved, and has been achieved, when British company managements have made the decision to attack the

French market and allocate the necessary company resources.

The embassy has been the scene for a number of annual displays of British products. An exhibitor one year had been selling on average 8,000 lawn mowers a year in France. The following year, when returning to exhibit again, it was able to report that sales had gone up to 35,000 machines.

The Ambassador lists four main ingredients for success. First, the export company's top management must show full commitment. Secondly, the company must do everything possible to ensure that it is

well represented by agents or distributors in the market.

Selection of the best form of representation must not be done on the cheap. Third, senior executives from Britain must make it their business to cultivate the right personal contacts in France, especially local authorities, public corporations and also the powerful volume buyers that are growing up in the consumer market.

Fourth, he stresses that every single British company that approaches the market must work towards ridding itself of the stigma of poor delivery performance.

"We have a good reputation for quality, but a few bad examples of late delivery can make it difficult for everyone. For instance, France is the home of a number of major

process plant contractors who carry out huge projects worldwide. Sometimes these contractors are expressly instructed by their clients to omit British companies when inviting bids as delivery from Britain is not reliable. This is an injustice, as British firms can be excellent performers."

The BOTB conference will not be dealing exclusively with the French market. Two of the case studies to be represented at the Hilton will be based on very successful launches into the French consumer market. Serge Richy, managing director of Cadbury Fry (France) S.A., a subsidiary of Cadbury-Schweppes, reports that his Paris-based company is now selling over 18m packets of biscuits a year. Turnover has been growing at 15 per cent per annum

regularly, but this year there has been a jump of 60 per cent and a further 30 per cent rise is planned for next year.

A feature of Cadbury Fry's (France) strategy was that it systematically set out to convince all the major French interests that Cadbury's biscuits were mainstream business.

Week by week, parties of six to ten influential French buyers were flown by executive jet to Liverpool and shown round Cadbury factories and taken on tours of busy food stores in places such as Chester, which gave the right setting for quality and tradition.

The Mettoy Company, which is a member of the Dolson Park Industries Group and which has a financial stake in the specialist Paris toy distributing company called Fair-Play, can also point

to rapid sales growth — up 50 per cent in 1978 and 300 per cent ahead of the 1975 figure.

The French buy toys for their children less frequently than the British, but they spend much more money, on average per purchase, said Fair-Play managing director, Robin Tchertoff "so 60 per cent of our business for Mettoy is done just before Christmas each year."

Tchertoff says that working with a good British company is a very satisfying experience, but he finds that some British companies have hardly heard of Europe. "I approached one firm in Lancashire and told them that I could sell 100,000 of their toys a year if they would just re-design their packaging out of the 1930's. 'Sorry,' they told me, 'we haven't got time.' Britain definitely has the quality goods. Sometimes it just needs a change in management attitude."

Sydney Paulden

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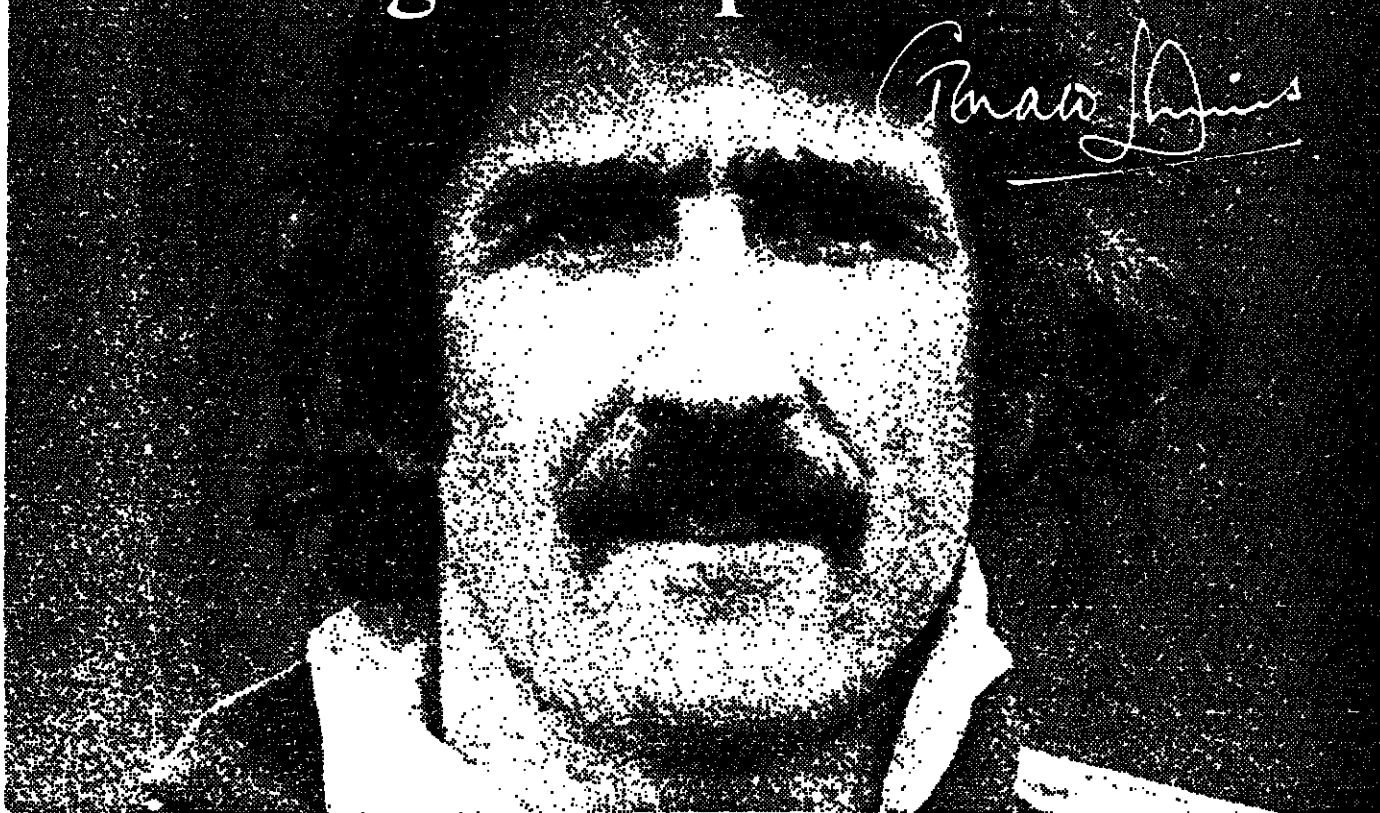
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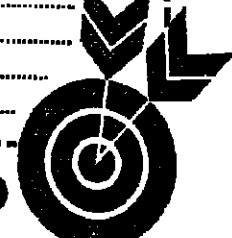
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Monday October 23 1978

## Middle East breakthrough

THE completion of the draft of a peace treaty between Israel and Egypt is undoubtedly an important breakthrough in the Middle East. It seemed improbable even eleven months ago, after President Sadat's startling visit to Jerusalem, partly because the Egyptian leader said publicly that he would never sign a separate peace, partly because until President Carter took the leaders of the two protagonist states to Camp David last month, negotiations between them seemed doomed to failure. With the removal of Egypt from the line up of states confronting Israel the outbreak of another full-scale Middle East war becomes less likely.

For the U.S. and for President Carter personally, the conclusion of an agreement (which depends on the approval of the respective governments), will be a considerable diplomatic achievement. Egypt, which has fought in all four Middle East wars since the foundation of the state of Israel in 1948, retains all the territory that it lost to Israeli conquest and should acquire the peaceful conditions it needs to concentrate on its overwhelming domestic problems. The most potent threat to Israel's existence is being removed and like Egypt it stands to make considerable economic gains from the normalisation of relations with its neighbour which should follow the signing of an agreement.

## Basic issue

But the enmity of Egypt and Israel was not the basic issue in the Middle East conflict: that is the displacement of the Palestinian people from their land and, in particular, the future of the Israeli-occupied West Bank and Gaza Strip. The critical weakness of the Camp David accords was that the conclusion of a peace treaty between Egypt and Israel was not made conditional on the implementation of the agreements on the future of the West Bank. Instead the U.S. and Egypt tried to convince Jordan and the Palestinian leaders of the area that it was worth their while starting their own negotiations with Israel. They told them that the accords on Sinai demonstrated what Israel was, in principle, prepared to give up, and showed that once Israel got the smell of peace in its nostrils it could make some surprising concessions.

But so far it is not clear that that policy has been working. The U.S. Government has failed to persuade Jordan to become

involved in negotiations, while Saudi Arabia, whose support is essential, remains aloof and local Palestinian leaders have remained adamantly opposed to negotiations. For the U.S. and Egypt the most disturbing factor is that Syria, which condemned the Camp David accords out of hand, is moving towards the establishment of better relations with Israel. The angry feud between the two neighbours has hitherto taken priority over pan-Arab considerations but there now seems to be a good chance of reconciliation before the Arab summit meeting which is due in Baghdad next week.

## Military strength

With Iraq offering to put its considerable financial and military strength behind the creation of a new anti-Egypt and anti-Israel front, Egypt faces the possibility of much more dangerous isolation in the region if it signs a separate agreement with Israel. Yet this threat does not appear to have seriously held up the negotiating process in Washington last week. It is not yet clear what formula has been agreed on for the linkage of the peace treaty and progress on the West Bank, but from the statements that have been made the formula does not appear to mean any reversal of what was settled at Camp David or to be impossible to get past the Israeli Cabinet. Both Egypt and Israel appear to have been anxious to sew up an agreement before the Baghdad summit and then ride out the inevitable Arab storm.

In the face of the new reality the most constructive policy that the Arab states can follow is to see what improvement they can make on the agreement thrashed out over their heads for the West Bank at Camp David. This is in effect what King Hussein has been doing: he regards the accords as an inadequate basis for peace but has not finally rejected the idea of negotiations. What he has been told by the U.S. has not so far satisfied him but has apparently caused alarm in Israel. His position is not made any easier by Egypt's actions. With the lurking possibility of a more extreme line being adopted by the Arab states at Baghdad it might be better if Israel, if it really believes an overall settlement to be possible at this stage, were now to make some gesture that would enable talks on the West Bank to get under way.

## A sensible tax reform

THE CASE for abolishing the annual road fund tax on cars and vans and making good the loss of revenue by raising the duty on petrol has been seriously considered by the Government on a number of occasions in recent years. The main attraction last time, which was in 1976, was the not inconsiderable administrative savings the proposal would offer. Phasing out the road fund tax would reduce the manpower requirement at vehicle licensing offices by at least 2,000 jobs.

## Material

The decisive arguments, which led to the proposal being turned down, were industrial ones. Increased petrol duties were likely to encourage motorists to switch to smaller and more economical cars, a sector of the market where British manufacturers were considered to be particularly vulnerable to import competition. This was, and still is, a point to be considered. But the lapse of time has not seen any material improvement in the competitive strength of British-made small cars, nor has there been much indication of the situation being remedied in the foreseeable future. Indeed, some of the new models which have been introduced by British-based manufacturers are imported from abroad. In the meantime, the arguments in favour of altering the basis of motoring taxation have not lost force.

In the first place, making petrol more expensive has much to commend it on grounds of energy conservation. It is ludicrous that motorists should be paying in real terms no more now than they were before the OPEC countries quadrupled the price of oil five years ago. If petrol duty were to be increased by no more than was sufficient to offset the abolition of the £50 car tax—which would probably mean an increase of about 19p a gallon—the British motorist would still be paying considerably less for

## WHAT BRITAIN SEEKS FROM A CURRENCY PACT

## Fairer sharing in the EEC

BY GUY DE JONQUIERES, Common Market Correspondent

LEADERS OF the Nine Common Market Governments will meet in Brussels on December 4 and 5 to decide the final details of a planned European Monetary System (EMS) which is intended to stabilise EEC currencies. Besides dealing with any remaining differences which their Finance Ministers have been unable to resolve, they are expected to declare formally whether or not their countries will participate in the scheme, due to begin at the start of next year.

Another item on the agenda, though less highly publicised, could also call for some delicate negotiation. It arises from the demands by Britain, Italy and Ireland for additional measures to strengthen their economies in parallel with the application of the EMS. They argue that observing stricter exchange rate disciplines would impose tough constraints on the EEC's weaker members, which would be offset in some way if existing disparities in economic performance between the Nine are not to grow wider.

At their Bremen meeting last July, EEC government leaders reluctantly agreed to a demand from Mr. James Callaghan, the British Prime Minister, that "concurrent studies" should be conducted during the second half of this year to determine how that objective might be achieved. The British Government would clearly like to obtain some commitment from its partners which would make participating in the system more acceptable to sceptics at home. That pattern became very clear last week during Mr. Callaghan's visit to Bonn.

In spite of their name, work on concurrent studies has progressed more slowly so far than the preparations for the EMS itself. National Finance Ministry officials, to whom the initial spadework has been entrusted, only began discussing the project late last month. The Finance Ministers will not get their first bite at it until mid-November. It therefore seems unlikely that more than a very general analysis of options will be available to

the Government leaders in December. It has yet to be decided, for example, by what criteria relative wealth should be measured in the EEC. Gross national product per capita is one obvious yardstick. But what else? Ireland wants national unemployment and population growth rates to be taken into account, while Britain and Italy favour a reference to severe internal regional disparities. Ireland and Italy also want balance of payments to be taken into account, but Mr. Denis Healey, the British Chancellor of the Exchequer, has objected that the logic of this principle would require India to transfer resources to the U.S. in present circumstances.

## Reforming the EEC budget

As these differences suggest, the three countries are far from agreed on exactly what they want. Italy would apparently be satisfied in the short-term by an agreement to subsidise interest rates on loans which it receives from the European Investment Bank, but in the longer term wants an extension of the Common Agricultural Policy to cover more Mediterranean products. Ireland, which does well out of the existing CAP, would like an increase of EEC spending, preferably non-reimbursable, on infrastructure projects, and to assist its industrial development. Amounts of up to £500m over the next five years have been mentioned recently in Dublin.

The British Government, for its part, now appears to have persuaded its richer partners to agree to a large new transfer of resources and is concentrating its attention mainly on trying to secure a reform of the EEC budget to ensure a more equitable distribution of existing EEC funds. It argues, with a good deal of justification, that the way in which the budget works at present tends to



A word in confidence from Herr Schmidt to Mr. Callaghan in Bonn last week when Eury was high on the agenda.

though they are unlikely to fall much in the foreseeable future. The main reason for these sharp increases is that, since the start of this year, Britain has been obliged to pay in sterling valued at current exchange rates, rather than at the artificially high rate which prevailed during the first five years of membership. This results from the adoption, last December, of a new European Unit of Account based on a group of floating EEC currencies. It replaced the previous unit in which currencies were valued at their 1971 pre-Smithsonian fixed parities.

Those who recall the lengths to which Britain went less than four years ago to renegotiate the terms of EEC membership may be surprised that the concessions which it extracted from its partners then have not prevented so sharp an adverse swing. But the notoriously complex "corrective mechanism" agreed in 1973, which provides for re-funds to countries making a contribution disproportionately large compared with their economic strength and payments position, has been of no help. This is because gross British contributions as a proportion of the total budget have never exceeded by as much as 10 per cent the British national share of community GNP—the threshold at which the mechanism is triggered.

## Three main options

Assuming that Britain is serious about tackling the budget imbalances at their root and will not settle just for a token financial hand out from the EEC next December, there are three main options open to the Government. It could seek: 1—A big increase of the overall budget to provide extra funds for non-agricultural spending. Ireland and Italy would probably support such a move (provided they did not have to pay for it). In any case, the EEC will soon have to face a major decision on the budget's future. At present, budget revenues are composed of the proceeds of customs tariffs, agricultural levies, and direct contributions from national exchequers—the latter to be replaced from the start of next year by a portion of national value added tax assessments. The ceiling on these "own resources" is currently set at

## NET CONTRIBUTIONS TO COMMUNITY BUDGET 1976

GDP per capita (£s per annum)	Net contribution per capita to EEC Budget (£s per annum)
original figures in dollars have been converted at average 1976 exchange rate	
Denmark 4,220	Germany +13.1
Germany 4,060	Belgium +3.9
Belgium 3,720	UK +2.9
France 3,630	Luxembourg +2.5
Netherlands 3,600	France +2.3
Luxembourg 3,530	Italy +0.4
UK 2,150	Netherlands -9.2
Italy 1,680	Denmark -28.7
Ireland 1,360	Ireland -39.9

These figures do not take account of payments from the Social Fund since the only data available on these refer to commitments rather than actual receipts. They exclude MCA adjustments from May 1976 when the system was changed so that MCA payments were made to exporters.

OECD: Main Economic Indicators

## MEN AND MATTERS

## Preaching to the heathen

On Wednesday, with the talk he is giving to those staunch enemies of socialism, the European Republican Committee. Anthony Wedgwood Benn will be hearing the lions in their den—or rather the elephants, since the ERC group supporters of ex-President Ford and the GOP Mrs. Joni Lysett Nelson, a U.S. lawyer who runs on Hampstead Heath most days and who chairs the ERC, tell me frankly that most of her members are "outraged" by the Energy Secretary's views. But she adds that the ERC wanted to hear "an intelligent member of the opposition expound his views."

She quickly explained that by "opposition" she did not mean to suggest that a Tory government is looming, merely that Benn supports "the opposite political theory to the one we adhere to."

After what the ERC describes as a "guzzle and a scoff" Benn is to speak on socialism in Britain. The ERC's first handout says he would talk on a "so far unknown topic." Did they consider socialism unknown here? "Oh, no," Mrs. Lysett Nelson says. "We're not that clever." The handout was prepared before Benn suggested the subject. When I traced Benn down to the Bristol hotel where he spent the weekend visiting his constituency he explained his venture deep into the enemy camp as a "piece of missionary work." He complained that "an awful lot of rubbish is written about British socialism" in the U.S. press and revealed that he will be making three lectures in the U.S. in the new year. Talking of these, he again adopted an evangelical turn of phrase, saying they were "a socialist mission to darkest America" to make the case for democratic socialism.

He is to lecture at such pillars of the U.S. Establishment as Yale University and the Harvard Business School. But he is also to speak to the Committee for the Formation of a Socialist Party within the Democrat Party. This is less of a fifth column than its name might imply and is affiliated to the Socialist International. I asked if it could be compared with the Tribune Group. Benn eventually found this fair in that the Committee wants to build up the unions' links with the Left wing of the Democrat Party. But initially he was disturbed at this suggestion. He would never admit British socialism to be compared with American Republicans, but he does not like them to be compared with American Democrats either.

## Turkish shift

The Socialist International is in fact set for a new member, the Republican People's Party of Turkey. The decision to admit the RPP has now been made and has only to be ratified at the International's meeting in two weeks time. But for Bulent Ecevit, the leader of the RPP, unleashing his troops on Cyprus in 1974, the RPP would have been a member considerably earlier.

It calls itself a democratic leftist party, arguing against the label social democrat since it believes this has overtones of Marxism. But recently it has had to face criticisms from other members of the International over the way that it is the only would-be member which governs with the help of a penal code in part copied from Mussolini.

The problem this code can cause were highlighted last week in the prosecution of a little old lady was put up for sale in London. It had been mixed up with a number of other routine coins in a small Communist Party of box. Though it was correctly catalogued as having been

of the penal code, copied directly from pre-war Italy, ban the setting of one social class against another. Apart from being used to make the CMTI banned in Europe, the articles were applied against the magazine. Among the foreigners to attend the initial hearing in Istanbul was Dennis McShane, president of Britain's National Union of Journalists. He says that he was given a permanent bodyguard by his hosts, with even his hotel door guarded. The political death toll in Turkey so far this year exceeds 500.

Ecevit is pledged to abolish the articles but the RPP's general secretary, Senator Ugur Alacakaptan, says action is delayed by the RPP's lack of a clear parliamentary majority. But a new method may have been found. The lawyers defending Uzun, all 52 of them, have asked the country's Constitutional Court to declare the articles unconstitutional. The last time such a request was made in the mid-1960s the court voted eight to seven against this. But after the excesses of the martial law period of 1971-1973 today the mood is more in favour of a change.

## Sold with a song

Art-world folklore features little old ladies arriving at auction rooms with a long-forgotten trifle which turns out to be worth a fortune. Unfortunately attic junk rarely fetches Attic prices, but last week Sotheby's saw three exceptions to the rule that people usually overvalue their bric-a-brac.

On Thursday a tiny farthing brought in by one proverbial little old lady was put up for sale in London. It had been mixed up with a number of other routine coins in a small Communist Party of box. Though it was correctly catalogued as having been

## Olive branches

The times they are a'changing. Not so long ago the only thought the Arabs gave to the Zionist Federation of Great Britain and Ireland was on how to blacklist its members. But last week Eric Moonman and Sidney Shipton, chairman and general secretary of the Federation, received a telegram thanking them for their "kind congratulatory message" in support of the Camp David results. The telegram also assured members of the Federation of "my best wishes of continued health and happiness." The sender was President Sadat.

## Glowing reference

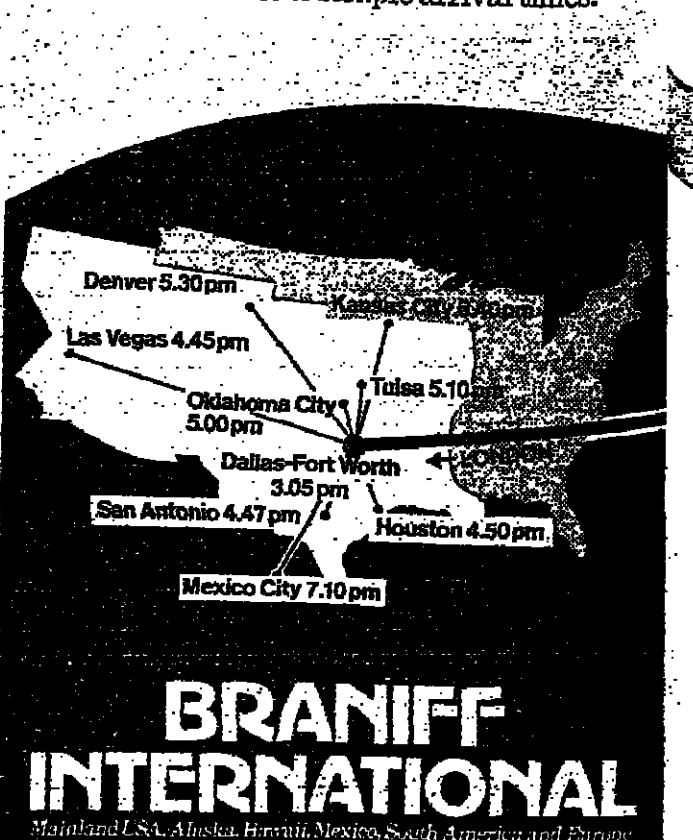
A city reader reports receiving the following reference for a would-be employee: "Despite his complete lack of experience he was tireless in his attempts to teach me how to run my business. He would never take No for an answer. He was fired with enthusiasm. Yours."

Observer

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## FINANCIAL TIMES SURVEY

Monday October 23 1978

Battle  
of the  
giants

By Max Wilkinson

THE OFFICE equipment market is becoming the arena for a struggle between international companies in which the advance of technology is constantly changing the rules.

The boundaries between the old familiar products are moving so rapidly that the companies which customarily served them are having to show a prightly adaptation to the new markets. But what is even more confusing is that many of the products which have merged only in the last few years are beginning to evolve into new functions that put them in a different category of the industry.

Thus computers are starting to control telecommunications networks at the same time as telecommunications become an integral part of computing. Electrostatic copiers, which a few years ago appeared to be straightforward rivals to stencil copiers, are now being asked to do more. Copying machines are being plugged into telephone lines. Typewriters, television displays, computers and tape recorders are forming a somewhat mysterious alliance under the term "word processor." Then it turns out that word processors may not after all be machines to make typing more efficient, but the start of a communications revolution which will challenge the milliar Telex and surface mail the same time.

Mechanical parts in all machines are beginning to be replaced by electronic circuits, and that a whole range of manufacturing skills are faced with obsolescence. Consumer items like television sets and video tape recorders are becoming

standard business equipment. Meanwhile small computers are becoming so powerful and so cheap that the constraint on their market is shifting from price to the ingenuity of suppliers in finding new uses for them.

## Complexity

These changes have been driven along by the rapid development of micro-electronic technology which has moved from the production of single transistors in the early 1960s to the development of complete computers incorporating many thousands of elements on silicon chips only a few millimetres square. The increase in complexity of these integrated circuits has been accompanied by a spectacular fall in price and large increases in production volumes.

The fundamental relationship between component makers and the manufacturers of office equipment is therefore beginning to change. It used to be that the component makers reacted to demand from equipment companies. But now the economics of semiconductor manufacture depend so much on high production volumes that the component companies are engaged in a restless drive to seek out new markets and to promote new products. To this end they are also beginning to move into the manufacture of products like micro-computers and terminals.

The rapid increase in the size and diversity of the office equip-

ment market has been accompanied by two other trends. First, manufacturers have tended to specialise; secondly, they have marketed their products on a worldwide rather than a national basis. Thus Diabolo and Quime came to be dominant in the production of printers, and their machines were incorporated by a large variety of original equipment manufacturers (OEMs) serving many different market sectors in different countries.

The availability of basic equipment like printers and minicomputers at fairly cheap prices has enabled a large number of smaller companies, particularly in the U.S., to develop their own systems using bought-in hardware as the basic building blocks. The word processing market is perhaps the best example, because in spite of its immaturity it supports more than 40 companies all competing for a share of revenues.

Although it is unlikely that more than a handful of these small companies can survive in the long term, they have played an important part in developing products, stimulating market consciousness and in enticing the large multinationals to follow them into hitherto unexplored territory.

At the same time as the larger companies develop products for new markets, they are also engaged in a series of disputes over the traditional demarcation lines of the industry. Thus mini-computer makers led by the Digital Equipment

Corporation (DEC) have moved strongly from industrial control into business systems. International Business Machines (IBM) has moved into telecommunications with its private automatic branch exchange (PABX) and in the U.S. at least with a determined bid to rival the telecommunications companies with its own network of data communications. Companies like IIT are increasing their emphasis on the range of business products.

The blurring of the old industrial boundaries has been accompanied by a series of titanic struggles between the large multinational companies which dominate the industry. Perhaps the most spectacular is between IBM and Xerox, which is being fought out in a range of markets across the world with Dutch Philips and IIT entering the fray rather later. In addition, almost every market in the office equipment market is strongly contested by Japanese manufacturers.

From their respective bases in computers and plain paper copiers, IBM and Xerox has each tried to move into the other's territory. Xerox's foray into main-frame computers proved an expensive disaster. It had to withdraw entirely with heavy losses. IBM, on the other hand, had considerable success in developing a fast copying machine, which precipitated a price war in the U.S.—although not in Europe. Now both companies are beginning to compete head on in the

emerging market for word processors. They will be contending with Philips, Olivetti, IIT quite soon, and a host of smaller companies.

Word processors are one of the most important and least understood of all the new office machines. They have been represented separately as an obvious evolution of the electric typewriter, and the gateway to a completely new type of all-electronic office environment.

Both views are partly true: that is why word processing is so vitally important to the strategies of the multinationals serving the office equipment industry. On the one hand word processors are no more than electric typewriters plugged into a magnetic memory. The memory records what is typed and can be played back to produce an extra copy or an extra draft when needed. This simple concept of automatic or powered typing is easily understood by office managers who might resist a more complicated concept. IBM has therefore shown great subtlety in introducing a relatively simple system with which it has tied up about 75 per cent of the present market in the U.S. and certainly a major share in Europe.

From this base it will be able to launch the next generation of word processing equipment, which is what really interests all the major manufacturers. This new equipment will be sold as a word processor, because that is the term with which

office managers are becoming familiar. In practice, however, it will be little different from a computer terminal or perhaps a computer on its own.

These new devices will not only be used for typing documents and letters; they will be able to extract information from the company's main computer; they will be able to use that computer to help them compose letters; they will perform calculations, incorporate semi-automatic editing functions; above all they will be able to communicate with similar machines across telephone lines.

It would be easy to ridicule some of the more extravagant predictions about what one manager called the "all-singing all-dancing office of the future." But most of the major suppliers of equipment take it extremely seriously. One reason is that the possibilities of communication between machines will put an emphasis on complete systems.

## Example

Large customers will be reluctant to buy isolated pieces of equipment for different offices if they think they will have a problem later in linking them all together. Manufacturers which can offer a complete system of compatible equipment will therefore enjoy a big advantage over their smaller or less well organised competitors. Moreover, the manufacturers which can offer a complete "philosophy" of

because of the way in which micro-computers can confer "intelligence" to a range of dumb-looking equipment like printers, terminals display units and disc memories.

This so-called "intelligence" gives peripheral devices the power to undertake quite sophisticated computing tasks.

Thus a computer terminal can pre-process data for its host machine, or it can be sold to a small office as a small computer by itself capable of routine tasks like accounting; or it could be sold as a word processor. This flexibility of machines also favours the larger company which has a variety of different marketing approaches for basically rather similar hardware.

But perhaps the central part of the office of the future will be the private branch telephone exchange (PABX). The next generation of exchanges will be computer-controlled and will convert all speech signals into streams of computer-like pulses or data streams. The exchange will not only have an important role as a communications centre; it is quite possible that considerable extra computing power may also be located in the exchange itself. Thus word processors may be linked together in a network whose centre is a processor, either inside the exchange or at any rate intimately linked to it.

The important point is not so much details of how these new systems will work but the flexibility inherent in any complete office system designed as a communicating network. Many small processors may be distributed throughout the network (some may even be in telephone handsets). They will be engaged in different office tasks, which are themselves linked—as for example typing letters and filing. The possibilities are truly astonishing. However, they are unlikely to be realised by small companies however ingenious they may be. Different technologies like plain paper copying and computing will almost certainly start to be linked together, while more and more emphasis will be placed on complete systems design and mass production. Although there will doubtless always be a place for any small specialist concerns as subcontractors, in the main markets the message of new technology is reasonably clear: "The race is to the strong."

## Office Equipment

The rapid growth and diversity of today's office equipment market is breaking down the traditional demarcation lines of the industry. New electronic technology, in particular, is bringing remarkable possibilities for office systems designed as part of a communications network.

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word processing

telecommunications

office equipment

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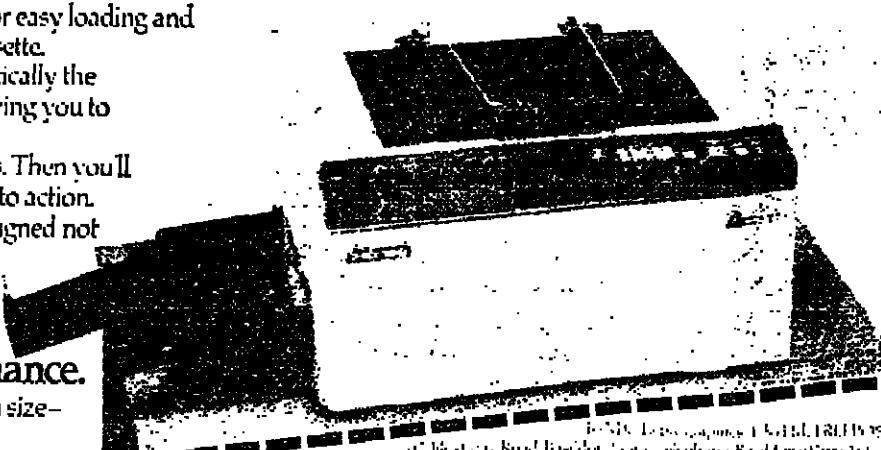
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# International market trends

THE INTERNATIONAL character of the office equipment industry makes it increasingly difficult to break down production into national totals. Products and systems are more and more being put together from components bought from many different parts of the world.

Even the components themselves may have an international origin. Thus semi-conductors, the basic building blocks of most modern electronic systems, may start as silicon chips fabricated in the U.S. then be shipped to the Far East to be assembled into packages, returned to the U.S. for testing, then shipped back to Europe to be assembled into equipment, which itself may form only part of an office system built up in yet another country. To make the picture even more confusing, identical equipment is often sold by many different companies under their own brand names. To give only one example: Nashua and Kalle both sell a plain paper copier which is made in Japan, by Ricoh.

The main consequence is that manufacture of basic equipment is being concentrated into the hands of a relatively small number of companies, often with a specialist product and a worldwide market. The specialisation of Quume and Diabolo in printers is an example of this.

Such companies tend, therefore, to regard markets on a worldwide basis, or at the least to divide them into large areas, like North America, Europe and Japan, much the most important three areas for the selling of most types of office equipment. For similar reasons, the large multinationals which now dominate the office equipment industry tend to think of world or regional markets divided into different product sectors rather than national markets. Governments, on the other hand, tend to be more interested in the aggregate national market and the trade balance which relates to it. However, because of problems of definition and the difficulties of keeping track on

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Employment implications	X	Copier market	
Typewriters	XI	Calculators	
Word processing	XII	The working environment	
NEB stimulus	XIII	Leasing	

the national origins of different parts of office systems, such figures are hard to come by and are notoriously unreliable.

The most important market outside data processing is still plain paper copying, although word processing equipment are predicted to have impressive growth rates.

According to an estimate by Addressograph-Multigraph, the world copying and duplicating market will grow from \$11.9bn in 1976 to \$21.1bn by 1981. In this total, the growth of the plain paper copier market is expected to have the fastest growth rate of 17 per cent a year, to reach \$13.6bn by 1981. Offset duplicator markets are expected to expand at 9 per cent a year to reach \$3.9bn by 1981, while the duplicating market is expected to show a 7 per cent a year growth to reach \$1.4bn in that year. Average growth outside the U.S. is expected to be faster than in the U.S. market which is already fairly highly saturated. The total U.S. copying and duplicating market is therefore expected to decline from just under half the world total to about 40 per cent of the total.

## Copiers

Most observers believe that the importance of coated paper copiers will decline relative to the new generation of small and

cheaper plain paper copiers. However, the market for coated paper copiers will probably increase slightly in absolute terms in the world as a whole, although it will start to decline a little in the U.S.

The copier market is still dominated by Xerox and Rank Xerox in spite of strong competition from the Japanese, particularly Ricoh and Mitsubishi. However, Rank Xerox still holds a strong if not dominant position in the important market for the larger machines including copier-duplicators. It is estimated by brokers Scott Goff and Hancock that these copier duplicators accounted for more than half of Rank Xerox's revenues in the year 1976-77. They say in their current report on the industry that in spite of reservations about the position of Xerox in the U.S., they believe that Rank Xerox, which sells in the whole of the world apart from the U.S. and Japan, is well placed to protect its market share from with its electronic system, likely to bring in an updated version before long.

Because it is fully digital, the PDX and equipment like it will offer the possibilities of switching telex, data and connecting word processing machines together if desired. This means that a document typed in one office could be automatically switched to any other office in the network where it would be reproduced automatically on a word processor there.

# Influence of the multinationals

MULTINATIONALISM IN the office equipment market naturally shares certain dominant characteristics with multinationalism in any other manufacturing and distribution sector.

Most importantly, the organisation of production and markets on a worldwide scale allows—indeed, demands—much larger projects than are possible with nationally-based companies, large either in terms of volume of production, or in terms of investment in research and development, or more frequently both.

The particular difference in the office equipment field comes at the increasingly important, high technology end of the market—that is, word processors, office communication systems, data communications and control.

Here, the research and development costs are comparatively huge, the more so since developing a new system must be complemented by constant upgrading of it to incorporate new technology as it comes on to the market ever more quickly.

The rapid developments in microprocessor and micro-computer memory technology means that ever-more powerful chips are succeeding each other every four or five years; and while it is not practical nor desirable to design entire systems on that time scale, the pressure of the change, and of competition which takes advantage of the technologies, means that innovation must be constant.

The size and resources of the successful multinational cannot only cope with such development, but can actually control it, both by manufacturing everything it requires in the way of components and/or by dictating the rate at which component suppliers will innovate.

Indeed, the multinationals tend to argue that only they can be successful in such a market because of their resources.

This is a contentious matter, to which we will return. But it is certainly true that multinational organisation presupposes multinational marketing, which in turn means long production runs and economies of scale, bringing

prices down (at least in theory). Multinationals cannot only afford to invest in massive research and development, it is absolutely essential that they do so. They are thus often technical innovators or (a point often held against them by a smaller fish) they have the ability to spot a promising innovation by a smaller company and to pick it up, then produce and market it themselves.

The tendency inherent in most multinationals is to standardise their equipment variety of reasons, often less to do with the multinational than with the laws and traditions of the countries in which they operate.

Standardisation is not usually regarded as a good in itself, but it does or can mean cost-patability across national borders, making (in the communications field) inter-con-

nection more easy: it means avoidance of wasteful duplication or near-duplication of types of equipment; and can mean the bringing up of one national standard to the level of a higher standard in another country, which then becomes an international standard.

Technical advance—again, at least in theory—ceases to be the prerogative of one country; it is immediately internationalised. In practice, of course, this need not be the case for a variety of reasons, often less to do with the multinational than with the laws and traditions of the countries in which they operate.

However, there is a constant pressure to make techniques available transnationally. The arguments against have been well rehearsed in Britain,

scope for marketing word processing techniques. A large number of companies have entered the field and more, including some large computer and communications companies, have announced plans to do so.

Mackintosh Consultants, for example, estimates the European market for automatic typewriters will double between 1976 and 1981 from \$60m to \$121m (Yearbook of West European Electronics Data 1978). They suggest that in the same period the total European market for electronic accounting machine will rise from \$356m to \$391m. For comparison they put the rise in the total European computer systems market at about \$8bn over the period from \$5.1bn in 1976 to \$8.2bn in 1981.

Perhaps one of their most important growth areas is the private automatic branch exchange market, which has traditionally been seen as part of the telecommunications system, but is now becoming accepted as a central part of the office system, and therefore of the strategy of the companies selling into the market. As PABXs become completely digital and computer-controlled, they will be able to offer many facilities besides the mere switching of telephone channels. The new PDX made by Plessey in the UK under licence from Rolm of California, is the most advanced on the UK market, though others from the General Electric Company and Standard Telephones and Cables are currently undergoing Post Office trials. IBM, which dominated the UK market with its electronic system, is likely to bring in an updated version before long.

Because it is fully digital, the PDX and equipment like it will offer the possibilities of switching telex, data and connecting word processing machines together if desired. This means that a document typed in one office could be automatically switched to any other office in the network where it would be reproduced automatically on a word processor there.

The ability to handle data as well as speech gives these new PABXs many intriguing possibilities. For example, they could be used to enable security systems to be operated semi-automatically from a remote station. Communication between the security office and remote sensors would be made through the exchange which could be used to switch attention from one part of a building or complex to another. The security officer would simply dial up the area he wanted to check to inspect whatever alarm system was fitted there.

Similarly the internal telecommunications and data networks will enable one secretary to serve more than one principal much more readily than at present. It is very likely that the private exchange will itself become part of the office systems it connects, with many computerised functions besides telecommunications built into it. When this happens, the large multinationals will clearly have an advantage over their smaller competitors in this field. On the other hand only large customers will require such sophisticated equipment, so that a large continuing market can be expected for simple switching systems.

CONTINUED ON NEXT PAGE

Max Wilkinson

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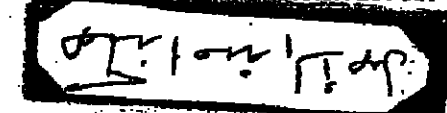
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OFFICE EQUIPMENT III

# Pressures on British manufacturers

THE PRESENT fortunes of the UK office equipment industry are rather bleak. UK manufacturers' share of world trade has been steadily slipping in the face of strong competition from multinationals and foreign technologies. The National Economic Development Office Sector Working Party for office equipment estimates that on a broad definition of office machines including computers, the UK's share of world trade in the first eight months of 1977 was 23m, a 50 per cent increase on the level of the previous year.

The main trouble is that UK companies have in general failed to take advantage of the advances in computer technology and the use of micro-processors. The total UK office equipment market in 1976 was valued at about £1.6bn, of which £670m was exported. The UK's strength generally lies in the electro-mechanical parts of equipment like copiers and plain paper printers, which are now coming to be regarded as relatively low technology.

## Dominant

Between them, Gestetner and Xerox dominate the world market for spirit copiers with between 50 per cent and 70 per cent of world sales between them. Gestetner, with its worldwide sales network, seems well placed to maintain its position, but on the other hand this market is expected to grow relatively slowly, at perhaps 2 per cent compared with an expected 10-15 per cent for the office equipment market as a whole. In plain paper copying, another sector of UK strength, a major producer, Rank Xerox, is under increasing attack from Japanese and other competitors. After more than a decade of monopoly, Rank Xerox has been attacked by a wave of cheap imports at the very end of the market. Seven Japanese companies are exporting to the UK and it is estimated in 1976 that the Japanese took 30 to 40 per cent of new placements in the UK. Rank Xerox still remains dominant in the market because of its strength in placing large machines, which generate much more revenue. However, in the machine sector it is being under increasing attack from International Business Machines, and will probably be edged before long with competition from Kodak and at least one Japanese manufacturer. Copiers and duplicating machines account for more than

half of the UK's total manufacture of office machinery and nearly 60 per cent of exports. But because of the strength of international competition, it is unlikely that UK manufacturers will show much relative improvement and by the early 1980s the balance of payments surplus for this type of machinery could be seriously eroded.

Outside copying and duplicating the only company of substantial size in world terms is International Computers Limited. However, ICL has only a limited involvement in what is generally defined as the office equipment market. In most other product areas, the UK owned manufacturing capability is distributed between small companies which have no hope of matching the research and marketing muscle of the large multinationals. Otherwise UK production depends upon the willingness of the multinationals to maintain existing factories in the UK or to open new ones.

In some products, like dictating machines, the UK depends entirely on imports. There seems little prospect of a British owned company being set up to challenge the importers, and no immediate prospect that a company like Grundig or Philips will set up a manufacturing plant in the UK. As the market grows, more imports will therefore inevitably be sucked in.

There remains a spread of office products which are either based on micro-computers already, or will be in future. They include accounting machines, calculators, small business machines and word processing equipment.

At present this area accounts for about 10 per cent of the UK's production, but a serious question mark hangs over its future viability. Success will depend to a great extent on an improvement in the general capability in the UK and in Europe to produce and exploit micro-electronics and particularly the micro-processor. In this group, word processing systems and automatic typewriters with a magnetic memory, probably represent the fastest growing market. However, this is the section in which the UK is weakest. Dataplex, one of the two small British-owned companies in the field recently went into receivership. And while Logica has a strong programming expertise in the field, it does not make hardware. International Computers Limited will probably move into this market, but only for large customers.

The NEDO sector working party suggests that the Govern-

ment should try to stimulate investment in word processing and at the same time try to support home industries with a procurement policy for Government bureaucracies. One of the difficulties of this policy, however, is that the trade unions representing office workers are showing strong resistance to word processing equipment on the grounds that they will reduce the number of secretarial jobs available. The Post Office, for example is currently having difficulties over a plan to replace its automatic typewriters with a more modern system.

## Problem

A more difficult problem will be how the right kind of product can be developed which will be capable of withstanding the extremely strong competition from almost all the multinationals which serve the office equipment market including IBM, Philips, Olivetti, IIT and Rank Xerox. None of these companies at present manufactures its word processors in the UK and there is no sign that any of them intends to do so.

The main hope for a UK presence in the word processing market now seems to be from the National Enterprise Board

which is planning a fairly substantial investment in a new subsidiary to market office products and to conduct research and development. The NEB will also take minority stakes in several manufacturing and software companies to which it will subcontract much of the work.

One of the main areas for this activity will be in word processing, where the programming skills of Logica will probably be combined with hardware manufactured in the UK by a company like Systime or possibly Computer Technology Limited (CTL).

The NEB wants at the same time to build up a marketing presence for a reasonably wide range of office products including facsimile transmission machines, which it would probably obtain from Mulhead and small business systems from Systime.

The need for state help in the office products area was explained by the Sector Working Party: "Small firms have special difficulties in financing their operations in a high risk environment where typical products have an extremely short life and where they have an important innovative role."

Max Wilkinson



3M 291 Fastback copier used in the print room at Satchell Control Systems Limited, Slough

## Influence

CONTINUED FROM PREVIOUS PAGE

which has wide experience of activities of multinationals, especially U.S. multinationals, which in turn has given rise to vigorous debate on their effects—good or bad?

The socialist argument— which points to the role of the multinational as an advanced capitalist structure, less amenable to popular or democratic control than previous structures—is the most important counter-argument, but cannot be raised here.

However, it often partakes of the same ground as the nationalist position, which argues that multinationalism kills off or depresses domestic industries with smaller resources.

Interestingly, the UK pretty much shows what might be held to be an advanced example of the latter tendency. The National Enterprise Board has been a decision to invest some £10m in the development of a word processing industry in Britain, researching and developing the equipment and attracting out its manufacturing then taking it back for marketing (as indicated in the article on UK word processing this survey).

The point this initiative illustrates is that such national enterprise will only succeed if managers can carve out a share of a market presently dominated by multinationals: and IIT's recent disclosure that means to move into word processing technology next year underscores the difficulty of the NEB's—and the UK manufacturers'—task.

The new company will operate in a market already dominated by the multinationals, and one which will already have taken much of its profits from new technology on their developments.

It will have on its side the tendency that State institutions will have to buy its products. In order to win a real market share, it must come up with products technically superior to those being offered by others. Can a national company hope to compete with the research effort of the global companies? Briefly, the strengths of these

companies are collectively comprehensive. IBM, of course, absolutely dominates in the computer and data communication markets: IIT in the PABX and message switching markets; both are either well in, or will make a dramatic entrance into, word processors.

Olivetti, with its traditional strength in typewriters, is also well placed in word processors: Philips, an electronic and telecommunications-based company can be expected to follow a roughly similar route to IIT. Rank Xerox is dominant in copiers and xerographic machines.

The competition between these and other companies which seek to operate internationally is, of course, intense. Yet convergence can take on new meaning among them, when it is seen that not only do they often seek to standardise their own products, but to standardise, or at least make compatible, their products with those of their competitors.

IBM has recently been concerned about the inroads made on their computer business by the so-called "plug-compatible" manufacturers—often fellow multinationals—which offer equipment which can use existing IBM software, but which is often much cheaper—sometimes by as much as 40 per cent—and sometimes more advanced.

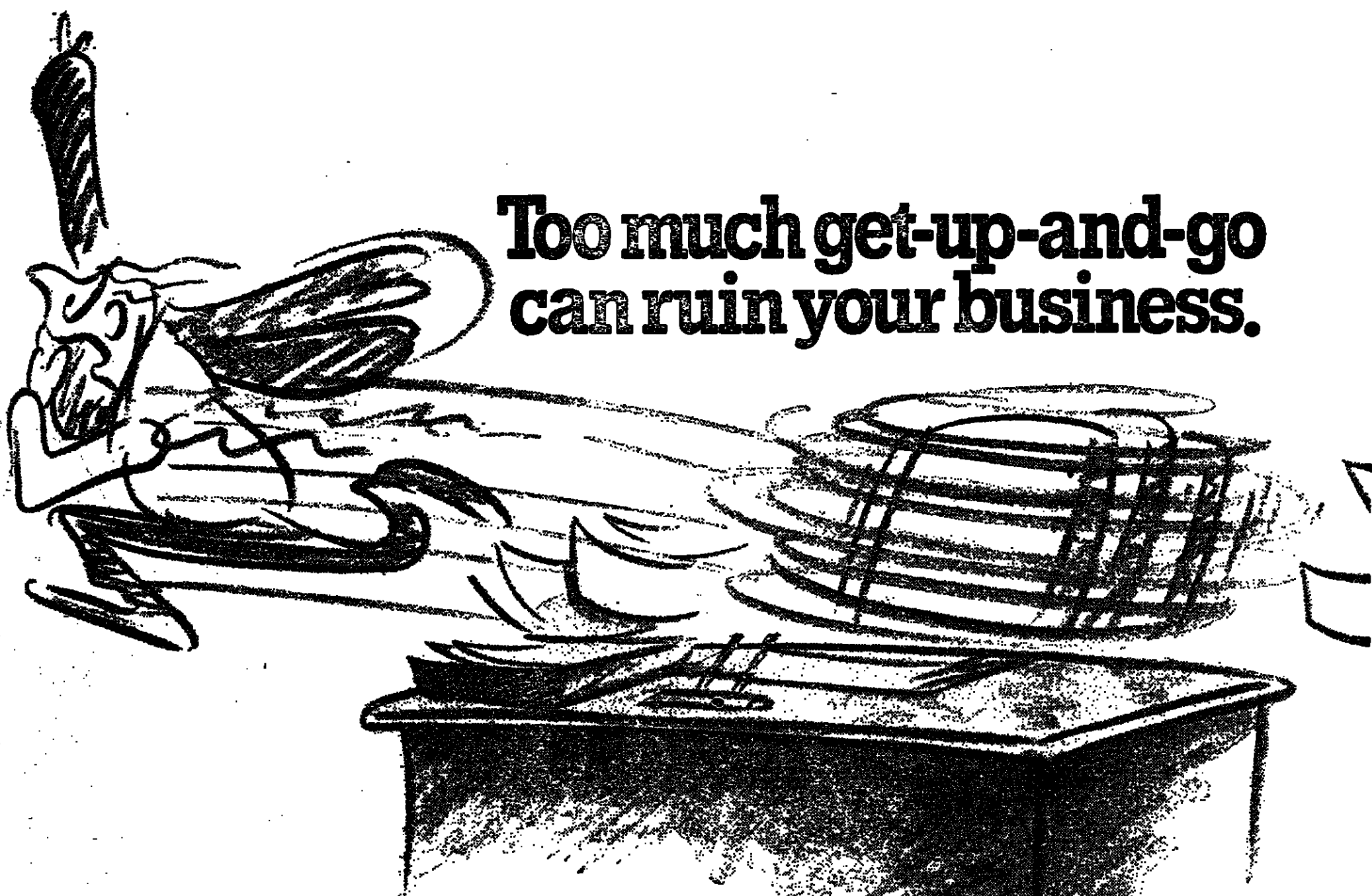
To those who see the result of such moves being the gradual evolution of One Big Company—whether the prospect is a vision or a nightmare—the apparently successful strategy adopted by IBM to reduce the degree of software compatibility will come as a disappointment or relief.

Indeed, IBM is now beset by anti-trust suits which, if successful, could increase diversity in the market (as it already has in the U.S. telecommunications market, as the AT&T monopoly is progressively whittled down).

Multinationalism, however, remains the most powerful force in the field, and the conflicts between the global companies and the individual states—a conflict which takes various forms—is likely to continue.

John Lloyd

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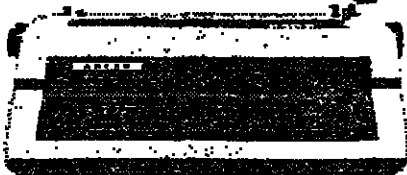
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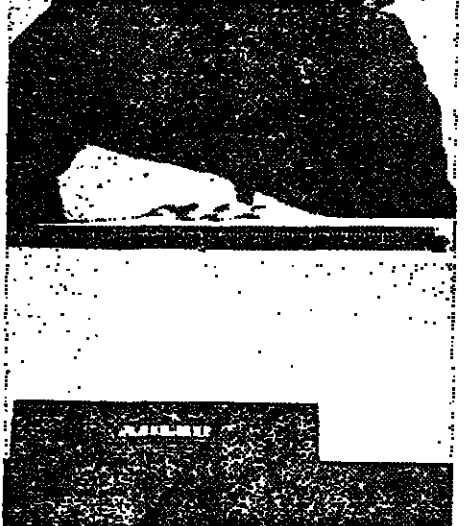
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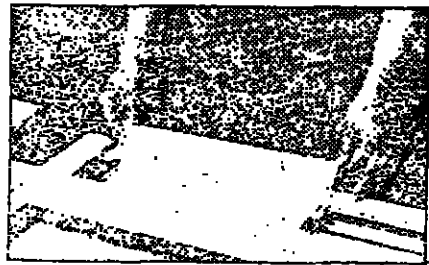
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## OFFICE EQUIPMENT IV

# Developments for the future

WHAT THE office of the future will look like, is the subject of many conferences and at each one, useful papers from which managers of office services can glean valuable data, come check by jowl with what can only be described as pretentious rubbish.

In Kyoto, this month, the International Conference on Computer Communication was held — among many other things — that word processing was unlikely to provide the benefits so widely claimed for it and that the real hope was computerised mail.

This claim was made by James H. Bair of the SRI Institute and he based his observation on the fact that while word processing seeks to streamline the secretary-typist function in the office, it has been calculated in the U.S. that this function accounts for only 6 per cent of the labour costs of business.

Non-clerical costs amount to the unexpectedly high figure of 66 per cent and it is in this area that great savings could be achieved.

He defined operators in this last area as managers and professionals and said that some 95 per cent of typical managerial functions were expressed as written or oral communications.

It followed that any improve-

ment that could ensure these communications went straight to the intended recipient, when necessary, without hindrance would enhance the management function, Bair said.

At the same time, a queuing facility for non-priority messages would enable senior staff to "bar" their telephones for specified concentration periods and allow them to complete difficult tasks without the constant interruptions which even the most dragon-like secretaries appeared unable to prevent.

Once this was done the stored messages would be attended to one by one.

Great improvements would be produced by automating the routines of addressing, labelling, distribution and storage for reference. Similar advances would be secured if it were possible to change very rapidly the media of communication, from typewritten to vocalised messages and vice-versa, or from handwritten to typed text, and so on.

Mr. Bair said it was very hard to estimate savings through use of computerised mail services now offered in the U.S. — such as Hewlett-Packard's Comsys or Tymnet's On-Tym — but on the basis of six hours' operations a day, with a user sending and receiving four messages an hour, he calculated there would

be a 30 per cent reduction in labour cost which would otherwise go into the despatching and receipt of these messages.

So one terminal or peripheral we may see in the average city office, five years from now, could be a device for computer mail. And with any luck for Britain, the unit would include a Muirhead facsimile reader developed from the 10 second per A-4 page device already built.

France is making great efforts to bring down the price of facsimile units to a level which will make them a matter of course for each home with a phone.

And in the above-mentioned area of telephone message queuing, IBM for nearly three years has been experimenting in-house with a voice storage network operated from touch-tone telephones. SFS (for speech-filing system) is used by about 180 staff at Thomas Watson research centre in Yorktown Heights to carry out a number of tasks.

The equipment takes out long pauses — but not the "ers" — and thus speeds-up playback. It takes instructions on message distribution and the time at which recipients should be called to hear the content. This could be at a designated number — a telephone in a hotel room, for instance.

IBM has defined the aim of the study as "demonstrate on an experimental basis how communications within an office environment can be implemented without reliance on conventional correspondence."

But messages have a storage life of only two weeks, which could be a nuisance. And the system is driven by about £1m of computers, which is rather expensive.

Nevertheless, it is a step towards one of the improvements needed to cut the rising tide of office costs, and it sketches out one of the duties of a future PABX.

### Study

How rapidly that tide is advancing is underlined by a recently released study from the Butler Cox Foundation which contains the daunting statistic that — across the gamut of organisations in Britain — the increase in the proportion of staff engaged in administrative and clerical work has risen from 20 per cent in 1950 to 40 per cent today.

Part, but certainly not all, of this increase is due to the flood of official paperwork imposed on industry and business by the bureaucrats.

The study gives the office worker distribution by number with costs in brackets as: managers and professionals 42 per cent (50 per cent); secretaries and typists 13 per cent (8 per cent); and clerks and cashiers 45 per cent (32 per cent). This bears out the contention of the SRI research man, mentioned earlier, on the areas ripe for more automation.

One novel development which could be of inestimable value in offices where a great deal of planning by diagram is involved is much closer to fruition. It is to be tested widely in Holland next year by Philips and it consists of an electronic drawing pad linked to a telephone and a TV display at the receiving end.

This allows a telephone user to speak and to draw at the same time so that a complex idea can be conveyed in a matter of seconds. Such units could be used in design conferences in engineering work since there is a correction facility for the drawings.

The price is around that of a television set. But with volume manufacture and the rapid decline in circuit costs the charge for such a unit in five years' time could be much less. It would be of much more value and far less costly to establish than the videophone.

Another unit which may be seen even earlier in offices where a great deal of confidential information has to be handled, is a voice recognition device which will respond to the commands of a person who has clearance to gain access to, and use, the information presented on a television screen.

Recognition is sufficiently advanced to allow an extensive vocabulary of words and phrases to be used. The equipment could be applied today in broking houses and currency dealings to speed the retrieval of client information or of positions on various currencies while the user is engaged on the telephone, in negotiations which demand a great deal of up-to-the-minute data, placed at his fingertips.

## Minis gain in prominence

SICOB THE French data processing exhibition which is probably the leading event of its kind in Europe, was this year described as "the golden age of the mini."

And Zéro-un Informatique, which coined the phrase, pointed out that several of the best-known producers of minis had chosen this event to flex their muscles. They were also demonstrating that they now build and sell machines powerful enough — though still minis, in most senses of the term — to rival with mid-range large machines, primarily because of the speed with which they can handle their work.

Digital Equipment displayed its VAX 11/780 which is a true "megamini" of considerable performance, while its Data General rival was promoting the Eclipse M600, designed specifically to impact IBM 370s. Significantly, the accent with Hewlett-Packard was on the HP250, a mini-conceived specifically for commercial applications.

The fact that the mini was prominent at SICOB is hardly surprising since the market is still growing at between 25 and 30 per cent a year, whereas in large, general-purpose machines the growth is slow to negative in some categories.

But a recent survey by Zéro-un revealed some surprising facts. For instance, among those companies which rely on computers to prepare their end-month results, 66 per cent say these are obtained faster by data processing and 74 per cent report that the quality of figures has improved, against 10 per cent who say it has declined.

But while 45 per cent believe their costs for this exercise have dropped, 30 per cent say they have risen and 20 per cent see no change. Meanwhile, the number of people working in the accounting sector as a ratio against the total workforce has risen to 4.6 per cent from 3.4 per cent in 1971.

### Reason

The most acceptable reason for the computing industry would appear to be that the accounting department is now much more frequently called upon to become involved in decision-making, although other reasons put forward are an increase in administrative workloads and a decline in administrative productivity.

What is extremely interesting — applied to the above — is that accounting costs as a percentage of turnover are 1.3 per cent for very small computers, 1.4 for large machines, but 1.8 for minis.

CONTINUED ON NEXT PAGE

Ted Schoeters

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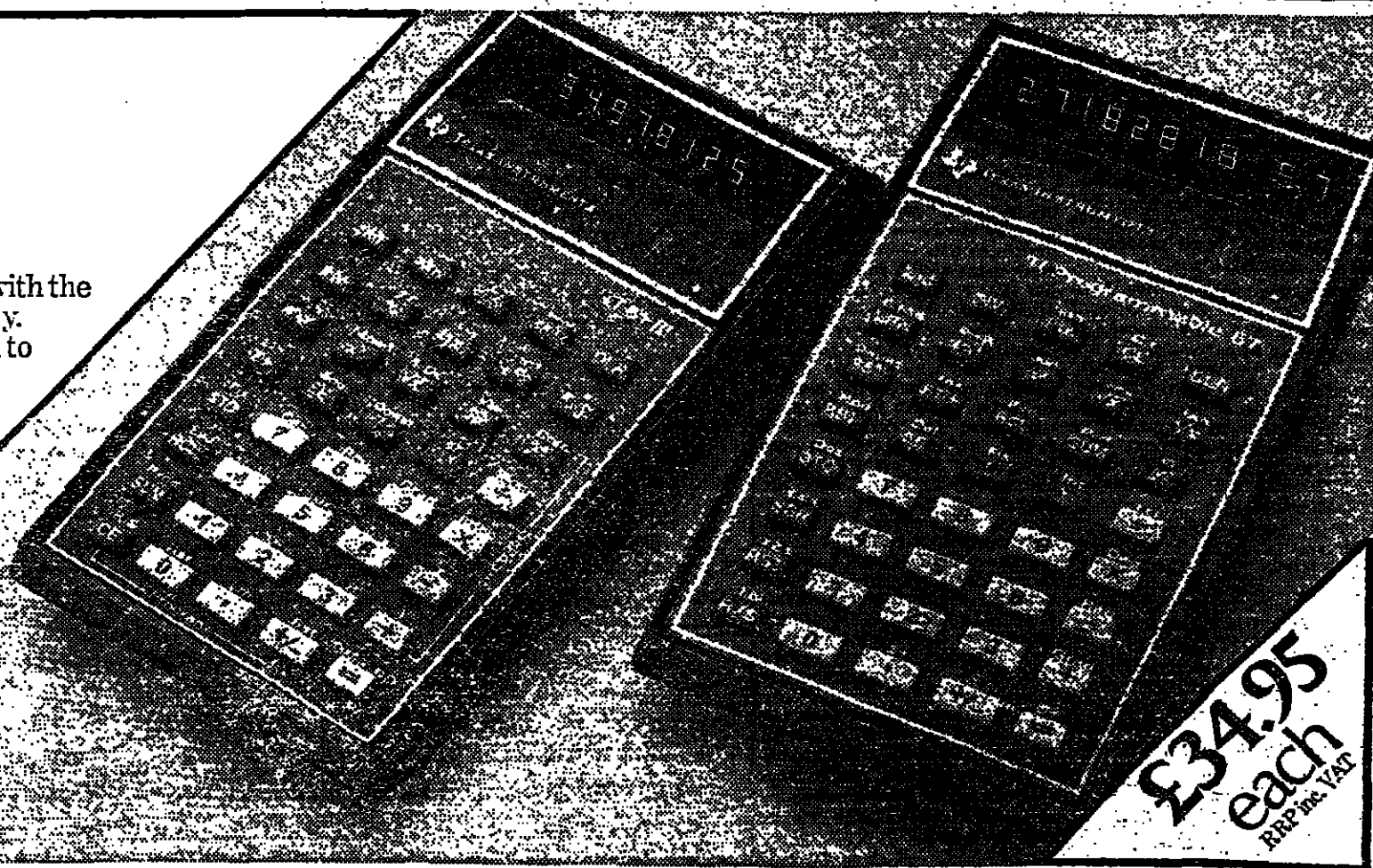
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OFFICE EQUIPMENT V

# Role of the large computer

ANYONE OPERATING large computers to support the work of big manufacturing companies, stores or service organisations must today feel more than his usual level of managerial apprehension as a result of the rapid changes in use.

Today's most frequently used "buzz word" is, of course, "distributed processing". But the definition of this varies between the north and south poles. In the north all big machines are laid rest and replaced by networks of minis "which can do the same job at a quarter the cost" and the south pole, which is IBM's stance, that the future must be steady and tried.

Those with this viewpoint also add that it is not yet to say goodbye to the big machines and all the expensive ware written for them—while making sure that company is able to match more important moves by major protagonists of distribution, and to supply increasingly voracious users with it they believe they should running.

The seeds of this situation sown long ago in the U.S. Dartmouth College. There, a group of students tackled the thorny problem of making reasonably powerful computer (from General Electric)

able to share its capabilities among a number of students, all working on different problems, without any of them interfering with other's jobs—and without inordinate delays at the primitive terminals then in use.

They were so successful that their work was embodied in a most important software development—called "Geos" by GE—which allowed users of the same machine to share it from remote points for problems to be solved on line. Users could also feed in large problems for solution as capacity and loading allowed—and that over a communications network—while at the same time operate the equipment on site as a main support computer.

With the takeover by Honeywell, this important asset was merged into the latter's MULTICS development. But there is no doubt that the existence and success of this capability of using large machines in many ways and from many points was the reason for the success of the 600s and their immediate successors.

**Drive**

This was before the emergence of the minicomputer and the tremendous upsurge in electronic technology which has conferred many of

the capabilities of big machines on the latter and, at the same time, created the microprocessor.

To a great extent, the drive towards distributed processing can be traced back to the shortcomings of major manufacturers in not providing operating systems which were economical in actual processing time. Add to this the defects of the communications network, particularly in Europe, and it is obvious that as soon as minicomputers began to use really fast logic and, were provided with adequate storage, users would want to throw off the trammels of the big central machine.

But it was not all that easy. Firstly, only one or two mainframe builders had anything like a mini and those that did not—including IBM—were not rushing in to provide the required link software or the extra equipment needed to control traffic between the main machine and its satellites.

Against this backdrop was played the drama of the plug-in peripheral wars against IBM and/or failures of small companies, rightly or wrongly attributed to the market leader's locking-out the competition by various means.

IBM was meanwhile developing communication protocols and tele-processing software, although generally still oriented

towards big machine domination.

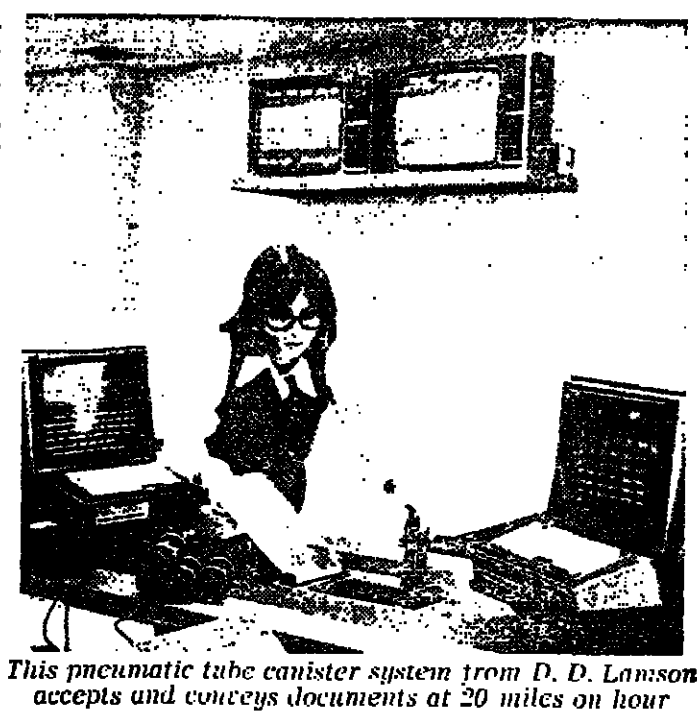
It was probably not until some of the big banks demanded relief from constantly escalating costs which highly centralised operations were causing (they were also having to provide growing volumes of information at branches and were contemplating further extensions of information-handling through cash dispensers and automatic tellers), that a move was made to improve software and system design arrangements for local servicing by new, automated bank branch equipment.

SNA, for systems network architecture, saw the light of day and again the plug-compatible manufacturers started to talk about lock-outs.

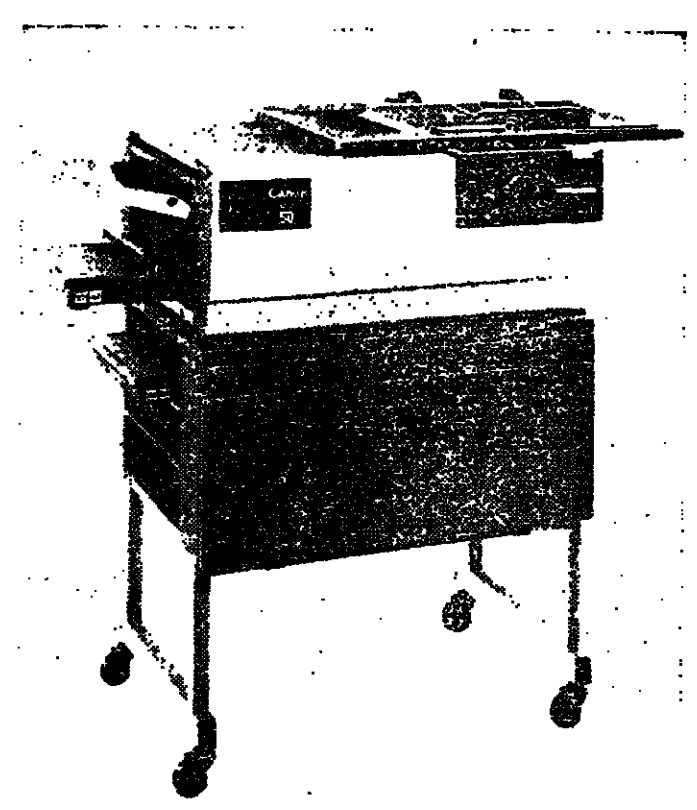
But progress in electronics and micro-programming is such that it is now much easier to follow the leader and, indeed, it is believed that at least one plug-compatible maker (Harris) has succeeded in implementing a large network of displays on its version of SNA ahead of IBM.

But the latest announcement involving this complex protocol, connected with the new 8100 front-end/distributed processing controller, generally called Orbit, has thrown IBM-watchers into disarray.

Some see in it a strategy for the next 10 years during which IBM will switch emphasis on



This pneumatic tube canister system from D. D. Lamson accepts and conveys documents at 20 miles an hour



Designed for low volume use, the Canon NP 50 plain paper copier

## Prominence

CONTINUED FROM PREVIOUS PAGE

his may do users some good, the very small dedicated machine does accounting work at lowest cost, because it is ultimately the buyers' responsibility to ensure that the vendor is trustworthy and knows his job.

The key question, perhaps, is to ask: "Who will be around in five years' time?" And to answer this satisfactorily, it is not enough to consider the established, small business machine makers. Some of the latter, in any case, can now afford to be slightly more complacent than they were.

Big machine manufacturers, and especially IBM, have little to lose in penetrating the low

end of the market and are likely to use advanced technology to a far higher degree than they would contemplate for products intended for their traditional markets.

It has not gone unnoticed, for example, that after all the talk of the magic memory chip which an NEB company may, or may not, be making in three to four years—at a cost in the British taxpayer of, say, £40m—IBM is actually producing this powerful memory device now for equipment which will start moving out to users in a few months' time.

It is thus of high significance that the latest equipment sur-

vey devoted to the future of small computers by Phoenix Systems of U.S., produced by SBS Publishing of San Jose, California, says that IBM stands to gain heavily at the low end of the market.

This is in the area where machine rentals are between \$500 and \$1,000 a month and the survey anticipates IBM's market share to go up from 32 per cent to as much as 45 per cent between 1977 and 1982.

Meanwhile, however, the company may lose some ground in the \$1,000 to \$2,000 category, as well as the \$2,000 to \$4,000 section under the concerted

onslaught in the U.S. by companies such as NCR, Burroughs and Univac, with Hewlett-Packard, Texas Instruments, Data General and DEC.

In Europe, companies such as ICL, Logabax, Nixdorf, Philips, Olivetti would also come into the fray.

But the overall effect of the predicted declines in percentage shares would be difficult to judge. This is because deliveries from manufacturers are expected to rise from 65,000 machines, worth \$2.85bn last year to 174,000 machines, worth \$5.65bn, in 1982. In other words there will be an increase of 22

**If you knew what your typing was costing you, you'd spend more on your next typewriter.**

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## OFFICE EQUIPMENT VI

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 MBM Computers Ltd., Cliftonville Road, Northampton, England NN1 5BU.

## Gloomy prospect for exports

THE MOST notable export order for the British office equipment industry for some time, the £1.25m deal by Rank Xerox to supply duplicating equipment to the Soviet Olympic Organising Committee, is a suitable reward for a company which has made strenuous efforts to sell in Eastern Europe.

The company has a special division dealing with the area, and some years ago was enterprising enough to send an entire train through Eastern Europe showing and promoting its products. Although it will give no precise figures, sales have subsequently improved rapidly. The Soviet order, which perhaps owes more to the traditional use of Rank Xerox equipment by Olympic organising committees, is nevertheless an important one. It is the largest British contract for the 1980 Olympic Games in Moscow.

The company will supply the Soviet Union with a hundred plain paper copiers as a free

loan to help the committee prepare for the games. In addition, it has sold to the Soviet Technical Machinery Import Organisation more than a hundred copiers as part of the communications system for the games.

Overall, the company is the UK's largest exporter of office equipment, with sales abroad last year (ending October 31) amounting to £117.1m compared with £90.8m in the previous year. In addition, it had an income last year of £56.5m from royalties, dividends and other income, compared with £63.7m in 1976.

Marketing is carried out in 80 countries for equipment manufactured in Britain and in Holland. Most of the larger copiers are made in the UK and sales are through 22 subsidiary operations in the main overseas markets, and a chain of branches and distributors.

In the Far East, one of the fastest developing markets, Fuji Xerox (50 per cent owned by Rank Xerox) is responsible for selling in eight countries. In Africa, where the company has a subsidiary in Nigeria, prospects are also seen as encouraging.

In the field of smaller machines, Japan continues to provide the greatest competition, while in the larger range the Americans, particularly IBM, have been the greatest challenger, although Rank Xerox either dominates or at least holds a substantial share of almost every market it is in.

The overall size of British office machinery exports remains extremely hard to determine, due to the great complexity of figures created by component exchanges, but the Business Equipment Trade Association estimates that sales abroad amount to around 35 per cent of the industry's £1.5bn annual turnover, about £535m.

Of this, copying equipment is reckoned to have the major share, while other sectors operate with varying degrees of success in overseas markets and others are hoping to do so.

although a serious challenge to this sector is unlikely to occur before 1980, some warning notes should be sounded.

The export prospects for stencil duplicators, in which the UK companies hold between half and two-thirds of the world market, are seen to be good, due to the ability for product improvement which has been shown and the strong marketing position of UK companies.

In other sectors, such as offset lithography, plain paper copying machines, typewriters and cash registers, the export prospects are seen as disappointing in the medium term. Although as yet the trade balance statistics for plain paper copiers continue to suggest the contribution of a significant export surplus, present indications the realistic projection must be a rapid deterioration of this favourable position," the report warns.

In the field of microfilm equipment, UK companies are expected to grow rapidly, primarily by exporting most of their production and it is thought likely that exports will grow rapidly by 1980. It is felt that both the Government Product and Process Department and the Export Market Entry Guarantee Scheme could be of great use to such companies.

Mailroom equipment is also seen as a promising sector where a large scale contribution to British exports could materialise, but the report warns that there are potential hazards such as a large scale technology change, particularly in respect of franking machines. Enhanced product development

work by UK companies is therefore likely to prove necessary if only to guard against a technological changeover.

On the problems and cost of export marketing, the report says that some companies have experienced difficulties in switching from marketing through distributors to setting up their own direct selling branches overseas, which usually puts a heavy strain on finances. It urges companies to use financing schemes where possible.

While the prospects for some sectors of the industry appear to be good, the general outlook for exports in the 1980s appears distinctly lacklustre unless investment in new, competitive products can be made in time to replace others.

Lorne Barling

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**NOMINAL LEDGER**  
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☐ Monthly Weekly Payroll with Cost Ledger Analysis  
☐ Credit Transfers and Cheque Production  
☐ P60 Production and End of Year Listing

**COST LEDGER**  
☐ Direct posting to Cost Ledger  
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☐ Label production and letter writing

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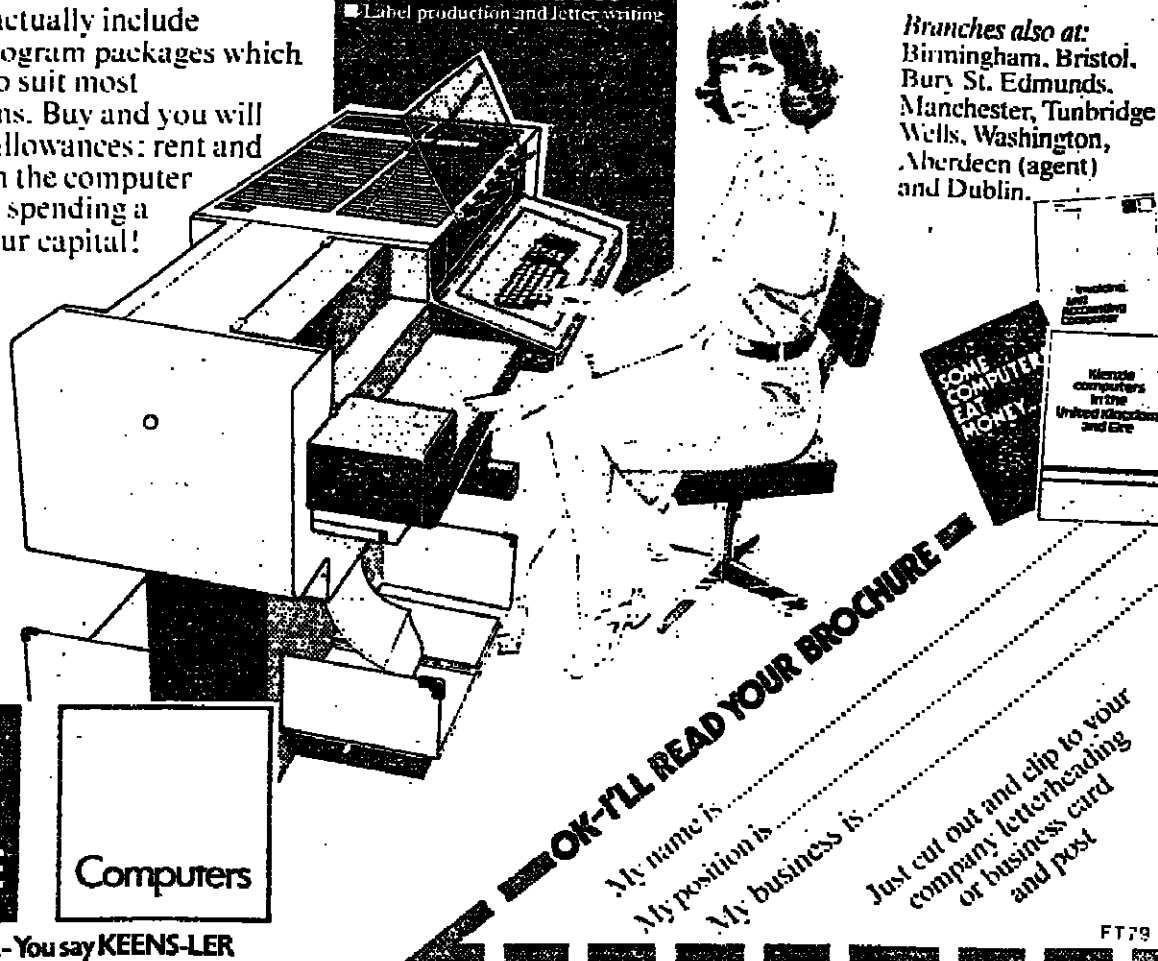
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### Report

The export prospects for the industry as a whole are summed up in the National Economic Development Council's Office Machinery Sector Working Party progress report published recently.

It first points to the international character of the industry, with the predominance of large companies and the absence of national brand consciousness or protective policies. "Components are sources world-wide; manufacturing tends to be spread in different countries for international trading, but to be greatest where the financial awards are likely to be largest. This applies to both UK and foreign-based companies. The UK industry must be international in its operation if it is to compete successfully," it says.

It also says that the industry is closely linked with the electronic and computer sectors for technology purposes and due to the UK's lack of progress here, some office machinery manufacturers are falling behind their American and Japanese competitors.

In indirect effect on exports may well be the threat from Japan, whose import penetration has now spread into plain paper copiers and will, the report says, extend into the whole range of office machinery including word processing equipment, unless action is taken to stop it.

The working party's report strikes a somewhat gloomy note about the past and future performance of the industry, pointing out that the overall objectives adopted for the last report were to arrest and reverse the decline in the industry's share of world exports of office machinery products.

To hold the UK's 1975 share of world trade, assuming continuance of the average 11 per cent a year increase for office machinery, would require a 70 per cent rise in UK exports by 1980 (to a level of some £200m in 1975 prices) plus an additional £18m production at 1975 prices in order to reduce the levels of import penetration to around 65 per cent, its level in the late 1960s.

However, more recent analysis suggests that on unchanged policies the likely order of increase in the volume of exports by 1980 will be closer to 30 than to 70 per cent and that far from reducing the level of import penetration, this now seems likely to increase yet further to levels not far short of 80 per cent.

It also says that reprographic equipment represents nearly 60 per cent of the industry's total exports, and

## Dictation machines show steady growth

HAVING RECOVERED from the depressed period of 1974, the market for dictating machines in the UK is now estimated to be growing at around 8 per cent a year and will be worth up to £18m this year.

The major suppliers experienced a boom year in 1973 but thereafter suffered nearly two years of difficulty and only fully recovered in 1976, and although few people expect any great expansion of demand, a period of steady growth is now anticipated.

Growth in sales of portable machines has been the most promising factor recently, and this is expected to continue, with added impetus being given by technical improvements in a field which is obviously likely to benefit from electronic equipment advances.

The Dutch-owned Philips Electrical has dominated the British market since the late 1960s and now holds an estimated 68 per cent of the total, followed by Grundig International and the Dictaphone Company, which each hold something more than 10 per cent of the market.

As with other products, Philips concentrates the manufacture of dictaphones in a particular area, in this case Austria. It also pursues the policy of providing a quality product at a price which, while competitive, does not necessarily aim at undercutting competitors. For example, its lowest priced portable sells at £80, and is considerably more expensive than many dictaphones offered by the many unrecognised manufacturers which are operating at the bottom end of the market.

However, Philips takes the view that since most of its sales are to companies, with buying being done on its behalf by well qualified people, they will see the dangers of opting for a product where reliability and servicing are in doubt.

"We are in the market and will be in the market in five years time. Any buyer could take his pick of a dozen machines at less than half the price of ours, but the dangers are all too apparent," the company said.

It is also pointed out that while company purchasing officers and executives can easily be made to see the cost advantages of buying a batch of dictating machines, it is another thing to persuade people to use them

sure people don't find an excuse to throw the machine aside and revert to their old system," the report says.

The major benefit of a dictating machine system remains the saving of executives' time, be quick to find fault with a machine, and manufacturers to do the distasteful in or out of machines as easy to operate as office hours, without the need possible. "We have to make to arrange for a secretary to be

CONTINUED ON NEXT PAGE

## Daro offers a great deal

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OFFICE EQUIPMENT VII

# The battle for employment

SUDDENLY THAT part of the world given to the latest fashion of doom and gloom has been hit by the notion that the economies of digital technology may lead to large-scale employment.

Is there anything in it, or is the latest wave in the "automation will put people out of work" show, one that now has been running for 30 years?

This time, it seems, there is a new twist. It is not just the microprocessor and integrated circuit technology that are causing concern; it is the cheapness of that technology allied with 30 years' experience in computing: our current ability to write software which can duplicate many of the functions of much conventional computing technology, which continues to fall in price at anything between 20 per cent and 40 per cent a year for the same performance, and our rapidly growing expertise in digital communications. The cheap i/c hits us at a time when we are well prepared for it, prepared in every way except that of finding other things for those who are displaced to do.

But what does that mean to the office? Are we bound for a future of unemployment among office workers, or is the new technology going to have the same effects there as its predecessors, greater throughput from the same number of people, with the elimination of some jobs and a substitution by others, the best example of

which, of course, has been the decimation of wages clerks in large organisations who can be said to have been replaced by DP staff.

A recent study in West Germany indicated that the new technology could reduce office employment, largely in the typing area, by 40 per cent over the next few years. Translated into figures it meant a reduction from 5m to 3m. The technology on which the study primarily fastened was that of word processing: the electronic typing, editing, copy generating, and distribution station which is beginning to appear in some organisations.

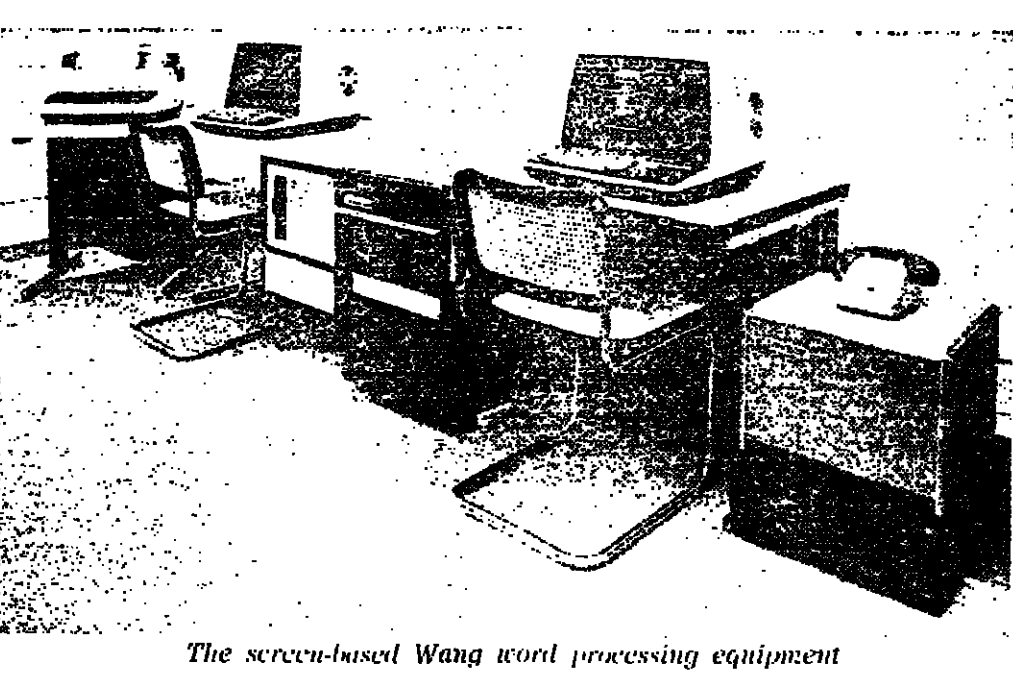
It is this which lies at the heart of what has been called the territory over which many believe the next great market battle is to be fought by the computing and telecommunications industries.

The word processor is the spearhead. The claim is—and this it must be remembered is for first generation systems—that they enable typist output to go up, sometimes quite dramatically, and that in doing so they also remove some of the drudgery of typing.

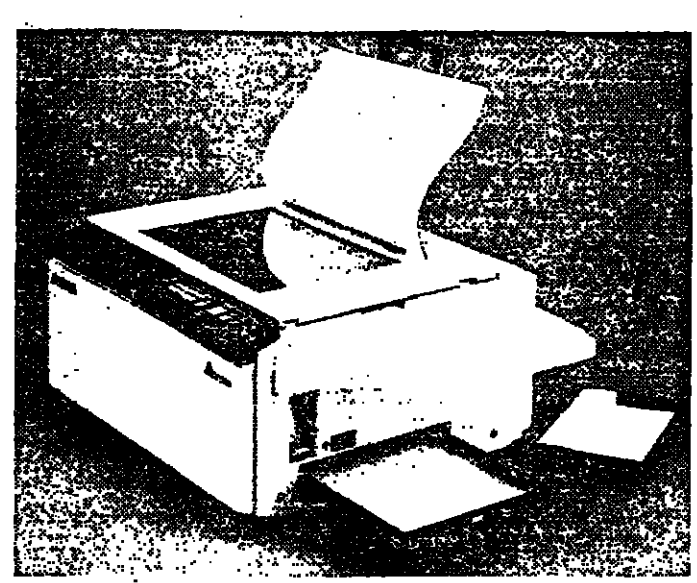
Logica, designer and manufacturer of the VTS 100 and distributor in the UK for its

Unicom system, jointly developed with Unilever, has observed productivity increases of between 150 per cent and 400 per cent: one typist doing the work of between 2½ and 5 more typists using conventional typewriters.

However, they are the first—and not the only—people in the business to state that the word processor is not the answer to



The screen-based Wang word processing equipment



The new Mitsubishi U-BIX 100 desk-top plain paper copier

a question of cost. A good stand-alone word processing station with VDU, built-in processor, storage and printer is as yet in the £10,000-12,000 bracket. However, it is noticeable that down in the do-it-yourself end of the U.S. computer market place people have already taken kit costing £2,000-3,000 and turned it into a word processing system. It is then only a matter of time before prices start to fall.

But word processing is not just about individual station stand-alone systems. More typically at present, such systems come in groups of typing stations (four, eight, 12 are not unusual) linked to a central computer either dedicated to the company's existing mainframe.

What is much more likely is that the computer in the office is going to do something else: close off employment opportunities by a massive improvement in office production capability. And it will not do it without stress and strain, some of which is as yet unimaginable. A girl may now be given the opportunity to handle four or five drafts in a day and still get it out before working hours are over. But are the people who are preparing the draft themselves capable of handling that number of drafts?

One or two executives have already discovered that, while they approve of increased productivity below them, they are not quite so sure when it reaches their own level.

That system, too, provides an archiving facility and a communications capability. And it is when there are enough systems around in place, either compatible or operating

## Dictation

CONTINUED FROM PREVIOUS PAGE

ment. The saving on secretarial time is also important, particularly in view of the increasing scale of secretarial services.

Overall demand for dictating machines has increased in direct response to the greater need for transcription capacity within the office. To be the best use of expensive overheads it is now regarded as essential that both equipment and staff time be put to optimum use.

A useful guide to potential users of dictation equipment recently published by the Business Equipment Trade

Association. This stresses that it is essential for management to determine exactly what type of equipment is required, if necessary with the help of a consultant, before any decision is taken.

Furthermore, it is regarded as shortsighted to buy equipment on price alone, without careful consideration of the user's requirements and the possible expansion of an organisation. The guide also suggests that the widest possible range of different suppliers should be asked to submit quotes, giving the greatest number of options possible.

On the question of training, it is stressed that the typist concerned can usually master a system within a short time, but it is more important that the person dictating into the machine should be properly trained. "It is probably fair to say that users would be better advised in ensuring that the equipment or system is fully utilised in a competent fashion than being over concerned with the technical excellence of the equipment," the Association guide says.

Philips and other companies offer training schemes in con-

junction with their equipment, but many users regard this as unnecessary, perhaps to their disadvantage, in the belief that dictation is a simple matter. Most manufacturers believe that it is unlikely that a user will get the best out of their equipment unless some training is given, sometimes for as little as a day.

Other companies offering equipment to the UK market are Assmann Dictating Systems, IBM United Kingdom, Lanier Business Products, Peter Williams (Business Machines and Systems) and Teletronics. Of the systems available, the

centralised recording method offers the greatest potential for cost saving, where audio typing becomes a specialist production function and is unimpeded by other clerical or secretarial requirements. In this system the dictation is stored in a bank of recorders and transferred to the "typing queue" in priority of the completion of the dictation.

By this means the audio typist is no longer submerged under a mass of work but can proceed at a steady pace during the day because the work is shared and distributed more evenly.

The question of fit is critical. It was reported recently that the trials carried out by the Central Computer Agency and the Department of Education and Science, in which Wordplex word processors and conventional magnetic cassette electric typewriters were put up one against the other, produced no significant gains for the Wordplex equipment across a wide range of typing activities. One should not be surprised: it should not be expected.

Word processing, too, is not yet the technology of the one-man band, the small business living with one typist who doubles for a whole host of jobs each of which would be an "occupation" for someone in a large organisation. It is not that the system could not cope with the range, but also

### Versions

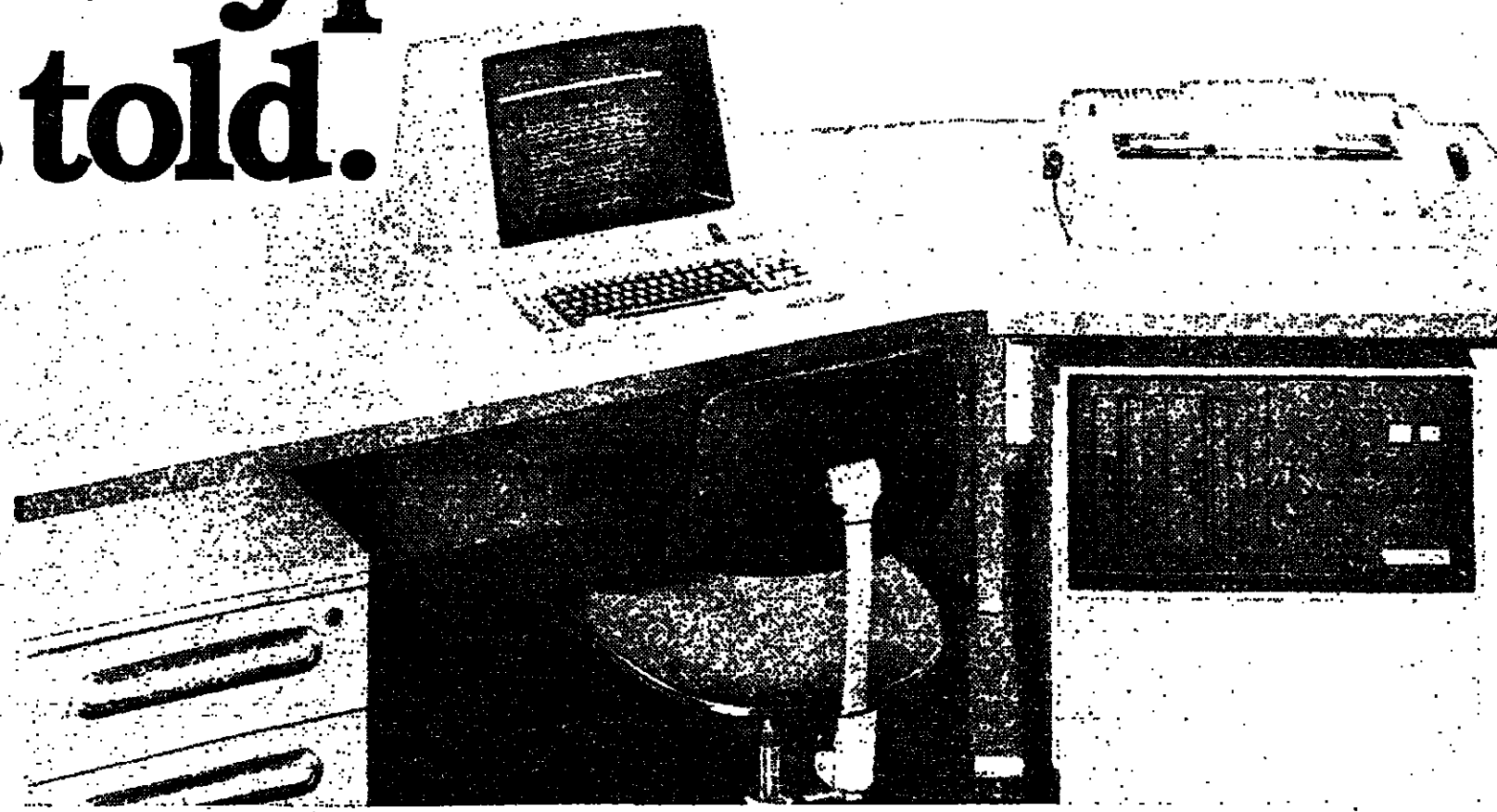
Thus the long-awaited IBM entrant in the field, the 3730 Distributed Office Communication System was recently announced in two versions: one stand-alone with up to 12 stations, the other linked to existing IBM mainframes, that mainframe providing the computing power. For it is still all computing.

That system, too, provides an archiving facility and a communications capability. And it is when there are enough systems around in place, either compatible or operating

Lorne Barling

Rex Malik

# The typewriter that does, as it's told.



The Philips P5002 Word Processor can type from memory, file information and obey complex commands, faster and more efficiently than any other machine in the world.

This most advanced Word Processor provides a highly cost effective way of handling documents and correspondence. Letters and reports can be typed, edited, revised, altered in format and reproduced with incredible ease and speed.

This means a considerable saving in time, labour and materials, as well as increased productivity and improved staff working conditions.

**Non-stop typing.**

Typing onto the screen is a remarkably fast and simple process, because moving to a new line is done automatically. It's just like typing one continuous line.

**Instant editing.**

Once the text is displayed on the screen, all kinds of revisions can be made. Passages can be inserted, deleted or simply moved around,

and the unaltered text is automatically adjusted to compensate for the changes. So there's no need for retyping or rechecking.

**Prints faster than the eye can read.**

At the touch of a button the text on the screen can be printed at an incredible speed of 45 characters per second. The print-out will be correct first time, without wasting materials.

And the text can be committed to a memory file for re-use or revision later.

**Enormous filing storage capacity.**

The P5002 records information and text on flexible storage discs, each of which has a capacity equivalent to 128 A4 pages.

Text can be filed on the disc by title, and summoned to the screen immediately for amendment or printing.

**Unique command functions.**

Because of its vast storage capacity, the P5002 can undertake many unique command functions. For instance it can:

- Reorganise its index system.
- Search for given words or phrases and even delete or replace them automatically.
- Fill in the details of personalised letters.
- Construct flow charts and block diagrams.
- Keep a glossary of important recurring words for instant insertion.
- Set type in up to nine columns at once.

**Easy to use.**

Despite the amazing scope of this machine, it is very easy to use. The average secretary can learn to operate it competently with only a few days training.

PHILIPS

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## OFFICE EQUIPMENT VIII

## Call for electric typewriters

THE FINGERS on the keys of Britain is largely in the hands of typewriters pressing for a speedier change from manual to electric. But the worldwide trend of transition from manual to electric typewriters shows several areas of less than spectacular growth — either where the pace of changeover has been slow or where new technology in electric typewriters has lagged behind other industrialised countries.

Britain, for one, has moved ahead slowly. Less than half the typewriters in this country are electric — exact figures are impossible to obtain but the ratio is certainly well below the rest of Europe where the broad ratio is two-to-one, as compared to 10-to-one in the U.S.

Conservative management and lower salaries, plus the fact that office equipment is still bought on price, are the main reasons for the slow change. But British executives now have to contend with a shortage of secretaries, and this "elitism" puts secretaries into a relatively powerful bargaining position — not only over how much secretaries believe they are worth, but also over the question of office environment in which electric typewriters provide an important drawback.

## Portable

But even as more sophisticated electric typewriters — both portable and standard — are slowly accepted into British offices, manual typewriters are still being assembled and distributed from the UK in big quantities.

Innovations for the manual machine may have reached almost saturation level, pointing manufacturers in the direction of the electric machine while developing countries are still crying out for manual typewriters. Olivetti, for instance, sells more than 90 per cent of its manual machines (produced in Glasgow) abroad.

Typewriter manufacturing in

can change the "golfball" — and with it, the typeface.

Olympia, however, prefers the "type basket" machine which, it claims, is much quieter to use.

Olympia makes two portable electric machines: the Monica and the Report de Luxe. The company also produces a proportional spacing typewriter called Excellence which gives a printed effect. So far, Olympia has launched only one "golfball" typewriter — the SGE75.

OEM brought out a new machine in March to compete on the home market and within the month should be launching the SE2000. Most of OEM's range is imported from Germany where the strong Deutsche-mark has squeezed its profit margins.

Adler/Triumph has a wide range of products including the 151D and the 151D — both "type basket" machines. One of its big sellers is the SE1000, launched on the market last year. Since then, two modifications have become available — the SE1000C and the SE1000D.

Olivetti has moved from making portables into a variety of other office products — the result of a squeeze at the consumer end of the market.

Last year Olivetti began production of the New Lexicon from the Glasgow factory, with the help of Government finance. This sells for around £200, appealing to people who need a high-quality home machine. It could be argued that the Lexicon is still ahead of its time — at least in Britain — since the idea of a portable electric typewriter still has a long way to go before it catches the public imagination.

SCM operates successfully in the basic, cheaper, lightweight machines. In this sector of the market SCM — producing around 175,000 units a year — is the leader in the UK and produces these simple manual typewriters from its West Bromwich factory.

SCM also makes electric port-

ables at its Singapore factory. These machines sell in Britain for around £80 retail. SCM also produces higher-quality typewriters in competition with Adler and Olympia.

SCM's acquisition of Olivetti's Glasgow plant was made last year by a U.S. subsidiary and not its British subsidiary — regarded as a significant move, since the company sees the "golfball" technology in worldwide, rather than UK terms.

Before long the company predicts the consumer market will demand electric portables on a similar scale as today's office market.

For the time being, IBM rules supreme in a "golfball" typewriter market. It has remained free from manual typewriter production and has developed a broad range of "golfball" options. One of its big sellers is the Selectric 82C, with correcting features, selling from £111 to £174.

IBM still has a couple of "type basket" machines — one of which is the Executive "D", with a proportional spacing, which sells for £311.

The big typewriter manufacturers still have plenty of scope for up-dating and improving the electric. Portable electric "golfball" machines with proportional spacing are yet to appear on the market; no-one has yet marketed a noisless typewriter — though IBM claims that a typist would lose her typing "rhythm" if the machine was silent — and productivity would suffer.

But technological advances have paved the way for the development of a broader, concept in the office equipment field: word processing. Though the term often encompasses a multitude of meanings and equipment, it is basically an automatic typewriter with a combination of other equipment and techniques used to increase productivity in the office.

Colleen Toomey

## Word processing sets fastest pace

WORD PROCESSING has come a long way since it was described by International Business Machines, innovators of the technique, in the mid 1960s as "the sum of the activities involved in composing, dictating, recording, transcribing and recording words in the modern office." Today it is the fastest developer in the business equipment industry.

In the relatively short life of word processing, technology has progressed from a basic automatic typewriter recording text by punching paper tape to a video terminal system recording on a floppy disc and printing out by seemingly space-age methods such as laser beam and ink jet. But office equipment in use is light years behind by comparison.

A word processor is simply a typewriter with an added memory and a level of intelligence which varies according to the system. The memory is the key to any word processing system.

After pioneering developments of punched paper, followed by magnetic tape memories, the most widespread system has been the magnetic card, first produced by IBM.

As the typist presses the keys, each stroke is electronically recorded on the card and simultaneously on the typewriter paper. Even though the task is manual, errors can be rapidly corrected at the time of writing or later, on playback.

Sentences or even major changes can be made to produce a per-

fect end-product which is then typed out at high-speed. Earlier magnetic word processing systems carried most favour with companies producing standardised letters used by, for instance, legal departments and customer liaison clerks. The punched tape system has been favoured by engineering firms which produce more detailed reports.

## Cassettes

Memory capacity was further increased by attaching cassette tape recorders to typewriters or printers. The cassette system was already on the market and was relatively cheap. Cassettes meant that long documents could be recorded onto a single tape. Pre-recorded material later combined with new material can then be stored on a second cassette for final printing. The chief disadvantage with this system is that the operator spends too much time searching for a particular message.

A big breakthrough was the introduction of the diskette unit or the "floppy disc." It has a superior storage capacity — now more than 100 A4 pages and in a fraction of a second it can search and find a particular part of the text.

These simpler systems are ideal for smaller companies or for an office reluctant to take the plunge. As word processors become more refined and add to power-ful memory stores, manufac-

turers have introduced video screens which show the text as it is being keyed in rather than wasting time through print-outs. A full page display holds about 6,000 characters and costs around £1,000-3,000 depending on the size and facilities offered.

There is also a cheaper — and perhaps neater — method of visual display — the "plasma" display which looks a lot like the window of a calculator. Its size makes it less flexible than a full page display.

The video screen not only eliminates the chore of print-outs to check copy. It also means that corrections can be made by a swift tap of a few keystrokes, changing a character or wiping out a whole block of text.

Another time-saver comes with the typing operation which can operate independently from the printer, so while the typist taps out long documents the printer can finish off letters or reports.

In a totally electronic system dictation can be checked by the author on a visual display unit in his or her own office before sending the text over a telephone line to the recipient. It is either printed out rather like a telex or held on a local magnetic store until needed.

This system invariably leads to substantial increases in productivity but for many potential users, it is a thing for the future.

In the next few years though, "shared logic" systems will

CONTINUED ON NEXT PAGE

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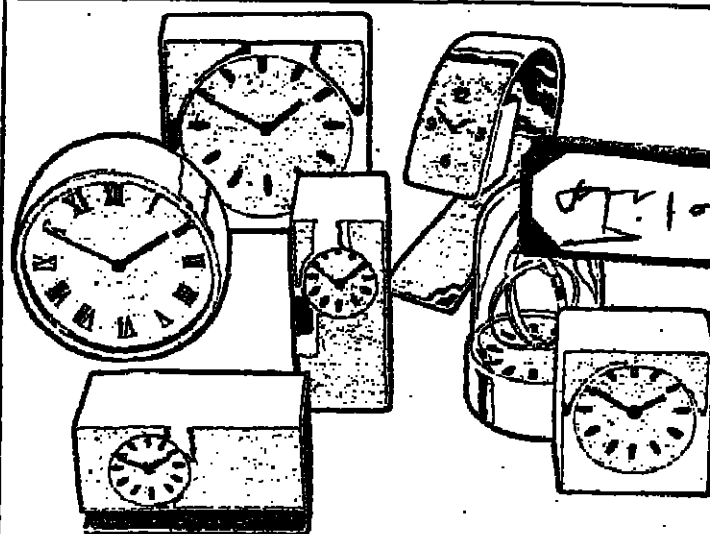
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# NEB stimulus for UK processors

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These companies include Computer Analysts and Programmers, Systems Programming, Systems Designers, Systems, and Logica — all of which are advanced software houses—and Insac, which is a computer programs marketing company.

This fact will probably mean that the new company will be forced into the smaller company sector of the market—that is, to sell to those firms which are coming to the market as buyers at the same time or after the NEB comes as a seller. This is certainly behind its already apparent interest in small business systems: though it will probably be in a favoured position for UK Government departments and nationalised industry orders.

There is simply no way round this problem. All of the companies participating with the NEEB will have a vested interest in success; all will have to run hard to catch up; perhaps the twin incentives will be enough to offset the disadvantages. Further, if the new company is to have a reasonable chance of a significant market share, it must come up with a product and with a design which will put it in the front of the new technology in the field, rather than produce something which

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Growth in Western Europe will rise as the cost of manufacturing stand-alone units rapidly decreases and as the benefits of increased productivity resulting from the use of IBM's equipment on the other hand is expanding and since IBM's strength lies in this field its dominance is likely to be felt for some time. The two other highly-ranked word processing

Magnetic memory-based equipment on the other hand is expanding and since IBM's strength lies in this field its dominance is likely to be felt for some time. The two other highly-ranked word processing

With the number of office workers rising by around 100,000 every three years—one-third of whom are typists—the world processor means a whole new ball game in staff training, recruitment, efficiency and productivity.

**ITT Business Systems**

## Colleen Toomey



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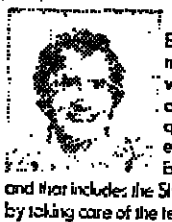
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## OFFICE EQUIPMENT X

# Achievements of IBM

TO UNDERSTAND commercial growth requirement and far computing, you have to understand IBM. To understand IBM's stand IBM. To understand IBM's you have to understand IBM's technological record. To understand that technological record, you have to understand that its products are made and its contribution to employment outside the U.S. IBM remains an American corporation driven at the strategic level by Americans whose starting point is the American market and its evolution.

To understand IBM's current strategy you have to also understand a number of interrelated points. First, the 50 per cent of the global computing market which IBM holds is based on large companies. Worldwide, 1980s, IBM has made two probably two-thirds of IBM's revenues come from 2,000 organisations. They are large organisations. They feature on such lists as the Fortune 500 listings of the world's largest utilities, banks and no doubt the world's largest government bureaucracies.

Second, if IBM was to continue just to sell computer systems primarily concentrated on the hardware of CPU, and in being very successful in store and terminals, there is no way that it could meet its in Europe.

The second identification is that of communications. In the eighties, computers will be a subset of communications. Communications can be read to mean many things: from the office boy delivering memos around the building to the transfer of large files between computers in differing continents using satellite circuits. So how is the strategy evolving? When IBM talks about what is called The Office of the Future, it does not mean the offices of the tens of millions of small organisations in the Western World, though it has no doubt some plans for those being evolved (and it certainly has a lot of product). It is talking about large organisations, and a continuation strategy for its historic base.

Now the large have one characteristic which separates them from the small. It is the characteristic which led to the IBM identification of communications as the key area: they are dispersed. Sometimes, just countrywide, as often two or three continent wide, or more.

So the game is being played in two ways. In the U.S. we have seen the rise (and the temporary halt through a court ruling) of SBS, Satellite Business Systems, the part-IBM of rules in software which allow its devices to communicate.

The office of the future probably includes all these with some additions. The IBM mainframe computer is obviously there, going on generation after generation as far forward as one cares to look.

But then there are intelligent terminals, COM, OCR, facsimile, photocopying and on-line microfilm storage. And when you have got that far of course, you can have the IBM phone. Indeed, there is almost nothing in the office which handles paper or information which could not be subjected to the IBM treatment.

It is not a question of will it happen? For it is already happening. Announcement after announcement from IBM leads in that direction and can almost be slotted into a total information handling in the office framework.

When then will the process be complete? I would guess by about 1981. IBM will not announce the office of the future as such, it will just tell people that it is already there, that it is just a question of viewing the building bricks in the right way. About all that is missing from my list is the IBM plug, the office inter communication interface into which to link all these devices. And no doubt that, too, is to come.

Nineteen-eighty-one, too, happens to be the date when SBS is supposed to become operational. This however is only one end of the chain. What of the other?

Rex Malik

## Optimism at Imtec

"IF WE had been faced with even hand-polished its own lenses at the beginning. The more that Imtec's original forecast of the market development proved correct, the more much larger competitors started to take an interest. It now believes that by 1980, the world market for microfilm printer/readers could be between £25m and £50m, quite enough to be interesting to even a large company."

That may sound like the comment from an executive running a lame duck company, but it isn't. It was made by Mr. Gerald Frankel, head of a remarkable small company which has increased its sales tenfold in the last three years, and has made consistent profits since he founded it six years ago.

The company is called Imtec, unknown to the man in the street, but very familiar to the large companies associated with the business of printing and generating microfilm.

It began as a typical entrepreneurial company founded on a good idea and a small group of men with the expertise to put it into practice. Back in the early 1970's Mr. Frankel, who was working in the photographic printing field realised the possible demand for a machine which could produce accurate large scale prints from microfilm. At that time microfilm technology was at a relatively immature stage and there was considerable doubt whether it would ever catch on in drawing offices enough to make inroads into the more traditional diazo or dyeline business.

One of the main doubts centred on whether it would be possible to enlarge microfilm to engineering drawing size without suffering problems of distortion. Drawings enlarged to less than full size tend to be difficult to work with. So Mr. Frankel went trudging round patent agents asking for someone who knew how to design a lens good enough for the job. He himself had a good idea how to manufacture a document feed mechanism precise enough for the new machine. His search was rewarded by a meeting with Mr. John Jeffrey, a retired physicist and mathematician from the Rutherford laboratory Cambridge.

With Mr. Jeffrey's help and £20,000 of family money plus a further £12,000 from two partners, Imtec was formed. At first it only made designs for machines which were manufactured by CAPS Microfilm, Mr. Frankel's former company.

However, the beneficial effects of Government intervention can also be seen in Imtec's history. In the first place, its good exporting record of about 70 per cent of sales qualifies it for considerable help from the export credit guarantee department (ECGD). Secondly the Government development grant not only helped directly with development costs but enabled the company to commit a larger share of its own cash to development.

The introduction of new techniques was, therefore, doubly speeded up. More important the extra profits this year should put the company in a healthy position to accelerate its development much faster than was envisaged in its plans drawn up two years ago.

Although it is perhaps premature to be more than reasonably optimistic about Imtec's future, it may well turn out that it is one of the successful examples of Government help to small firms - a case in which grant aid was able to give a push to the flywheel just in time to get the engine firing of its own accord.

From the start, Imtec was in a development phase and for two years its only income was royalties from CAP. Then by 1974-75, it had started to sell its own machines. By 1976-77 it had achieved sales of nearly £300,000, with seven desk top microfilm readers and printers in the field.

Like most entrepreneurial businesses Imtec's success had been founded on identifying a market which larger companies were ignoring. In 1972 only a few companies, Minolta in Japan, Bell and Howell in the U.S. and Alos in Switzerland saw any long term market for reader-printers. It was therefore able to develop machines in time to capitalise on a later demand from companies like NCR and Remington Rand, which became Imtec's customers.

However, although Imtec's products were generally recognised to be of high quality and reliable, the whole operation was very much a small-time craft production. The company

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## OFFICE EQUIPMENT XII

## Rivalry between giant companies

FOR A decade or more, the rivalry between the two giant U.S. communications companies, International Business Machines (IBM) and International Telephone and Telegraph (ITT) has been a matter for comment and speculation.

In his book on ITT, Anthony Sampson plays on the idea that they would eventually lock horns like buffaloes, as their traditionally separate product lines began to look more and more similar. It seems increasingly that the arena in which this battle will be fought will be that of office equipment.

ITT's history in the office equipment sector has been a long one—on a generous definition. Since the 1920s, the company has been a manufacturer of PBXs (private branch exchanges). Because ITT is a far-flung multinational which traditionally bought into countries through acquiring various companies, it had tended to make different types of PBX in different countries.

Now, in Europe, that has changed. ITT manufactures and markets one "family of PBX," the Unimat range of products, which are designed and manufactured in Germany, with the software being supplied from Britain. The Unimat "family" is a space division system, fully electronic, with distributed micro-processor control. The largest system is the Unimat 4080, which gives up to 2,000 lines (a larger model is on the way).

Unlike its IBM competitor, the 4080 does not offer data facilities—ITT says it is not necessary at this stage of the market.

## Centres

A second traditional business is telegraph and teletypewriter equipment, again dating back to the 1920s. The main centres for teletypewriter manufacture are in Britain (ITT Creed) and in West Germany (Standard Electric Lorenz).

Here, unlike in the PBX market, ITT has not unified manufacture and design—though it makes no secret of longer-term plans to do so.

ITT Creed and SEL manufacture different machines, largely because their native PTs—the British Post Office and the required, while a common (this was entering the lions' den



A cluster of ITT 3280 visual display units at the Wimbledon offices of Wiggins Teape Paper Limited.

German Bundespost—have substantially different requirements.

ITT Creed has, however, proved itself very successful in Britain dominating the teletypewriter market. The new model—the 3300—has just received Post Office approval.

The third arm of ITT's office equipment manufacture is its message switching production, the various areas, ITT's British Systems Group is in Brighton). Though the process is not yet a programmable device which can store and switch telex messages on automatic control, using a telegraph input terminal to get into the trunk system.

Back in the 1950s, the system being offered was still hard-wired. ITT now claims to be among the leaders in its latest products.

In the early 1970s the company was offering a range of products separately (those of the most significant initiatives have been the launching of a programme, in 1974, to take the company into data communications).

ITT decided to move into the IBM plug-compatible market (this was entering the lions' den

division of the company was indeed), and a large one also needed to develop and supervise the approach. ITT

It launched the ITT 3300, a direct competition with the IBM 3280, using its experience in voice network systems to gain experience in data

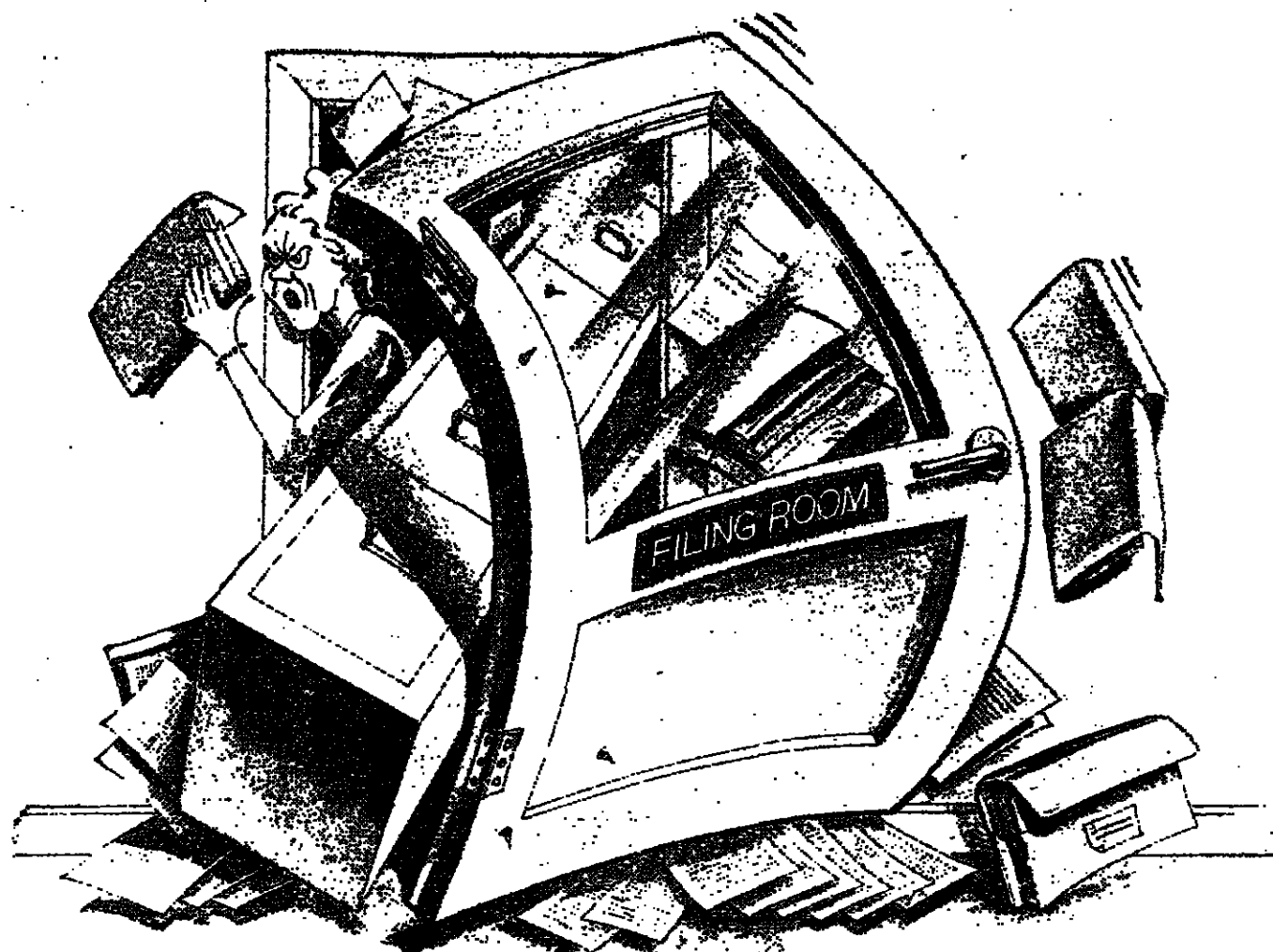
So, in 1972, the company works. Asked if this means the end of making computers, ITT rather coyly says "no." Convergence obviously has some way to run.

The company reckons its turnover for business systems Europe-wide to be around \$600m, and expects this to double in the next five years.

ITT now has a number of new irons in the fire: this year, it introduced a facsimile terminal—the 3500—which allows the user to transmit copies of documents via a telephone line.

More dramatically, ITT is finalising plans to move into the word processing market next year. This again is classic IBM territory and ITT will have to run very hard to win a share of the market.

John Lloyd



## By 1980 you could be on the street

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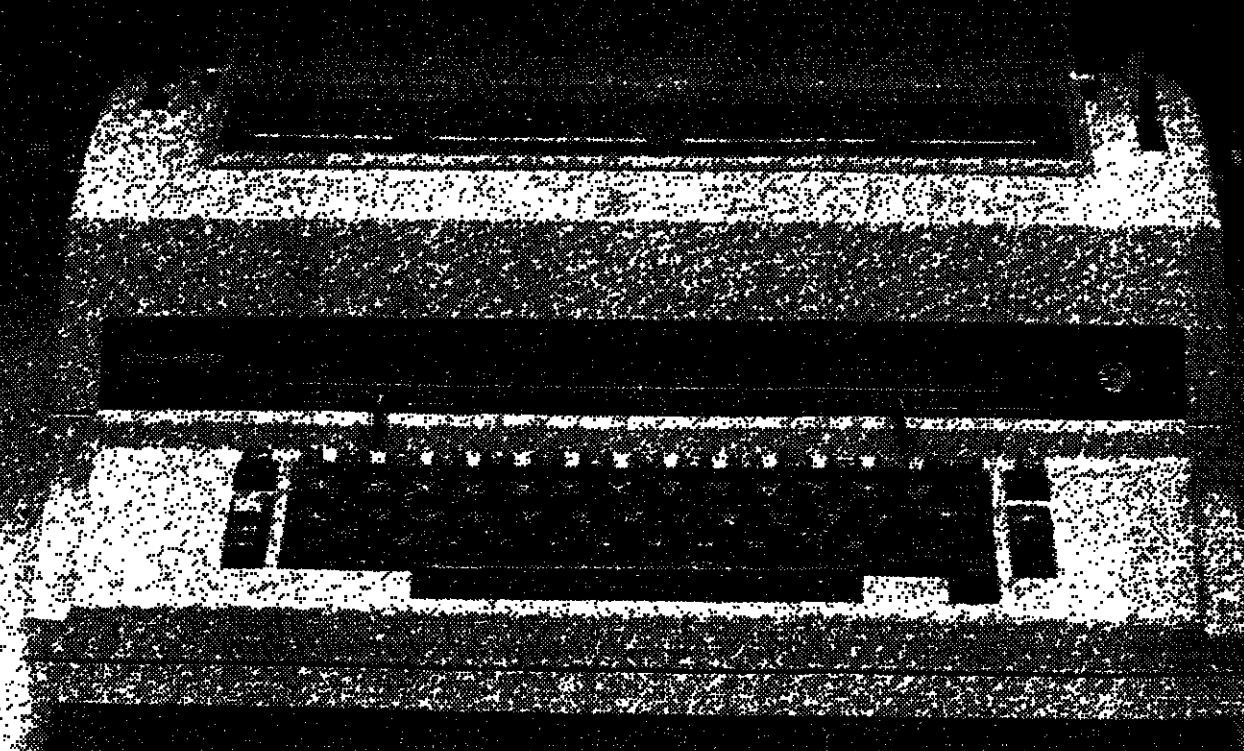
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## Advent of electronic mail

ONE OF the more futuristic developments envisaged in telecommunications is a system known as electronic mail—the sending and receiving of messages by electronic means.

Basically it involves the use of the computer and its ability to receive, store and transmit messages without the need for the physical framework of the present postal system. It would fit in smoothly with the evolution of office electronic technology generally.

As to be expected, the Americans are the first to make a move in this field. The U.S. Post Office recently filed rates in Washington for ECOM (Electronic Computer Originated Mail), a service aimed at the large business user.

Mail will be generated on computer tape, delivered either on-line or physically to Western Union and transmitted to post offices (originally 25 are envisaged) which will turn it into hard copy and deliver in the normal way.

But why should anyone want to handle mail in a different way? It is because large-scale economies can be foreseen, whereas existing methods point to ever increasing labour costs and increasing postal charges. Electronics can change the tempo from a rather unreliable delivery system to one with a high degree of reliability where time of receipt can be pre-arranged with a high degree of certainty.

Whether or not post offices offer electronic mail services, business organisations are increasingly introducing intelligent data terminals, computerised PABXs, word processing systems and electronic copiers in their office equipment technology. They will integrate these into large systems. At first, as some have been doing for quite some time, the integration will be internal, but sooner or later they are going to be faced with a disparity between their internal system and the external system.

If public telecommunications do not provide services the larger organisations will increasingly go their own way, applying for permission to switch messages between them and their external partners, whether supplier or customer (where the volumes justify) and the like.

In this country, Telex apart, the Post Office lacks electronic type services—although it has made a tentative start with Viewdata, has a facsimile service called Autofax under development and is watching closely the development of Telex, the intercommunication of

word processors. But there it is waiting to see what standards are adopted before making a move.

So in Britain—for the moment anyway—electronic mail is a later rather than a sooner prospect. The Post Office has in hand one of the biggest

technological investments in British industry. System X, and the digitising of the PO network. These two exercises will stretch its management resources to the full.

R.M.

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## OFFICE EQUIPMENT XIII

## Facsimile units: going for growth

EVERY OFFICE has been on the verge of installing facsimile transmission equipment for years—that is, if you believe what the manufacturers have been saying about the market.

To be fair, manufacturers have been caught out so many times in their predictions of a boom in sales that they no longer claim it is "just around the corner."

Instead, they are predicting or at least hoping for a strong and steady growth over the next few years from what is still a very small base.

Estimates as to just how many facsimile machines are in use in Britain vary wildly from manufacturer to manufacturer. Top estimates say there are nearly 11,000 machines in use

and these taper down to those who say there are just over 6,000.

The most reliable estimate comes in a private survey which found there were 8,650 facsimile machines connected to the public telephone network at March 31 this year, according to one of the suppliers.

Facsimile equipment has not caught on in Britain where there is an estimated 100,000 in use or the U.S., where there is around 150,000 and this in part reflects the ease of communication in Britain.

Documents in Britain can be moved between industrial centres with relative ease—most first-class mail is delivered

the next day and distances between centres are short enough to make messenger or rail. Red Star links economic for occasional urgent documents.

In contrast the benefits of being able to transfer documents electronically are far more obvious to the user in the U.S., where the distances between centres are great, the mail is slow, and the telephone system fast and efficient.

The reason for the swift acceptance of facsimile equipment in Japan is rather different and it is because of the difficulty of manufacturing and operating a telex machine with so many characters in the alphabet.

There are three "groups" or

types of facsimile machines now being manufactured with a fourth well on the way. All three are available in Britain, although the very great majority—around 90 per cent—fall into group 1, the most basic.

The main difference between each type of machine is the speed and quality of transmission; the quality measured by the number of lines resolved per inch.

One of the complaints about the early facsimile machines that transmission could only be made between machines of the same manufacturer—a problem reminiscent of the lack of compatibility of audio cassettes when first introduced, and now with video-recorders.

The problem of incompatibility between machines of different makes has, in part, been solved by the setting of standards in Europe by CCITT. Most of the major manufacturers

making group one and two machines conform to the prescribed standard and are able to relay information to each other—and it is now a necessary selling point of these machines that they are compatible with other makes.

This has not been solved for the most advanced machines the group three, where a standard is not to be set by CCITT until 1980, something which is holding back some manufacturers, UK and because they say they do not want to have to alter a machine once in production.

A group one machine is one which can transmit a sheet of A4 paper in either four or six minutes and with a resolution of 96 lines to the inch.

This is the most common in use in Britain and it is one in which Rank-Xerox are well established market leaders with its TC400 which sells at £325.

There are a number of other suppliers in this group, including Plessey and 3M, selling a similar machine made by the Japanese company Matsushita, Dex and Muirhead.

However 3M has its own manufacturing capacity in the U.S. and is to start selling its own group two machine in the UK and is phasing out its sales of Matsushita's products.

Group one machines are for

low-cost low-usage and critics are quick to claim that companies actually needing facsimile equipment should be using something faster and with higher quality reproduction.

But it remains the biggest seller and it looks as if it may be some time before the more advanced models replace it at the number one spot.

The new market which is now developing is in the Group two machines which can transmit an A4 document in two minutes, or longer. The slower the machine transmits, then the better the quality at the other end; also the ability to run on a six minute phase means it can transmit to a group one machine.

There are a cluster of companies selling in this area, including Siemens, ITT, 3M, Plessey, Dex and market leaders Muirhead, the only British manufacturer of facsimile equipment.

Group two machines are markedly more expensive, the Muirhead 442G a sophisticated automatic facsimile costs nearly £4,000 although 3M are launching their own manual machine the 2346 before the year end which the company sell for £1,425.

There is now only one company offering a group three machine in Britain capable of sending an A4 letter in 35 seconds—and this is the Hoechst subsidiary Kalle Infotech. Ironically the group three machine was introduced in the UK nearly three years before the first group two.

At around £7,000 a machine it needs a very heavy traffic to justify the cost. According to figures provided by Kalle Infotech the break-even point is only two copies a day on a long distance transmission to Australia or Hong Kong, compared with telex, or 30 copies a day for communication in Britain.

But Kalle Infotech is shortly to lose its position as sole supplier of the very fast machines to Office approval for their own "fax" links across the Atlantic digital machine, which it hopes to launch in the middle of next year. And it claims transmission times are between 20 and 30 seconds.

The size of the market for the high speed group three machines is very small, although Kalle Infotech will not say how many its sold its competitors estimate it is less than 600.

Kalle Infotech says that it sees it growing by 50 per cent a year for the next two to three years, and then between 20 and 25 per cent through the 1980s.

None of the suppliers seem very confident at predicting the growth of facsimile on Britain, and many of them describe it as a fluid and uncertain market. Rank Xerox is not intending to move into any more advanced machines from its basic best-selling group one, although it has the options available to do it.

And Muirhead are awaiting a CCITT standard in group three before venturing into that market.

Facsimile machines are now used mainly in publishing, particularly in newspapers and magazines, the oil industry, the armed forces and in some large companies for reporting to head offices. Machines are largely sold into companies where there is known steady flow of information between various points and where the cost of facsimile is justified in comparison with other means of communication.

The industry has long-awaited the time when facsimile equipment becomes accepted as a general means of communication and people will buy them because "everyone else" has them—just as Telex has now become a standard business tool.

When—or rather, if—that happens the suppliers would have their "boom," which would justify why there are now half a dozen suppliers in a £4m market which also needs a strong service and maintenance back-up.

The next stage in the development will be facsimile machines connected to computers which transmit the information to each other at very high speeds. According to Kalle Infotech the manufacturers of its facsimile machine Rapicor, is to start testing a high speed Office approval for their own "fax" links across the Atlantic digital machine, which it hopes to launch in the middle of next year. And it claims transmission times are between 20 and 30 seconds.

The manufacturers obviously like to see facsimile as being an integral part of the "work station" of the futuristic office, combining with word processors, telexes and all the other communications.

Jason Crisp

## Philips developing strong presence in private exchange

PHILIPS, THE Dutch electronics multinational, is still essentially a telecommunications and consumer electronics company, winning large orders worldwide.

Philips' steady diversification into the office equipment market means that the company will probably soon be ranked also among the world's major producers of office systems.

In the area of telecommunications, company is extremely strong in telephone exchange equipment and in subscribers' apparatus, equalled in Europe only by L. M. Ericsson and, possibly, Siemens. Philips' recent joint venture with Ericsson in Saudi Arabia, on a contract worth around £20m, has enhanced the reputation of both.

So it is not surprising that the company should have developed a strong presence in the private exchange market, especially in Europe. Its latest model is the EBX 6000, a large private exchange, which now has post office approval. Philips expects to announce several large sales in Britain later this year.

But the division of the company handling its office equipment is the business systems division. The genesis of the division was in 1958, when Philips introduced its first dictation machine, after deciding to move beyond the telecommunications and consumer products markets, in which it had been so successful.

The company had no clear plan on office systems: dictation equipment itself was simply an intelligent use of tape-recording expertise. And at first, the equipment was marketed through the same outlets—electrical retailers—who handled the consumer goods.

But it soon became clear to the company that it required a different marketing strategy: and it chose to market the machines through the office equipment retailers, who had the great advantage of sales teams who introduced users to the equipment on offer.

Stimulated by a growing knowledge of the marketplace, the dictation machine effort

grew until the company claims it is now the European market leader. Philips has introduced, earlier this year, the "300" range—three mini-cassette dictation machines which have the added refinement of a magnetic strip which can be electronically programmed with instructions for the copy-typist, so that a number of start points on the tape can be obtained at the touch of a button.

The business systems division greatly expanded last year its scope by introducing the company's first word processing machine, the 5001, which works on magnetic cards.

Earlier this year, a second generation machine, using flexible (floppy) discs the 5002, was introduced. The machine is compatible with IBM software, and is aimed partly at the American market. The company sees the floppy disc route as the most promising.

Philips views this as a logical development, since it is strong in "word input"—dictation machines: they are now seeking to build up a range of "word

output" machines—word processors. It admits that the word processing market is beginning to look crowded: there are now some 50 suppliers, offering around 200 systems. But Philips expects strong growth, and therefore wants to be strongly placed.

Two other divisions of the company work in related areas: the data systems division and the business communications division. The first began ten years ago, and produces and markets small office computers.

The company sees a prime market in the banks, which have a growing need for computer terminals.

The business communication division is concerned with in-house communications—intercom systems, paging and close circuit television.

For the future, the company sees development in all sectors. Dictation machines will continue to get smaller in size and more sophisticated: it should soon be possible to market a machine on which the user can edit his dictation electronically—then, if he wishes, transmit it at high speed down by telephone line to

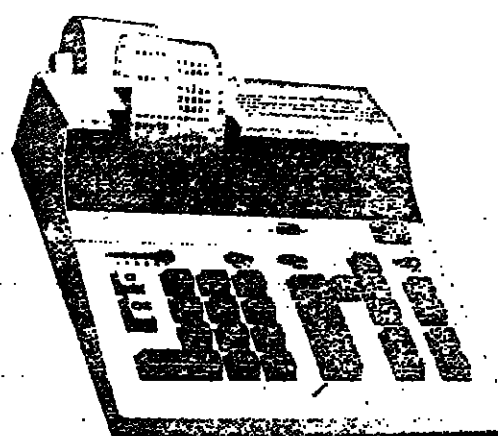
be recorded in the office for transcription.

Still more futuristically, it is thought to be possible to cut out the transcription route, and "transcribe" straight on to the word processor, playing the prepared tape into the machine and displaying it on the screen where it can be further edited. The technology for this development is not yet available; but

the problems are not thought to be insurmountable.

The products of the company's various business equipment divisions—taken in aggregate—now begin to constitute a strategy for complete office systems. It is in this direction that the company wishes to move, hoping to market an integrated system in a few years' time.

John Lloyd



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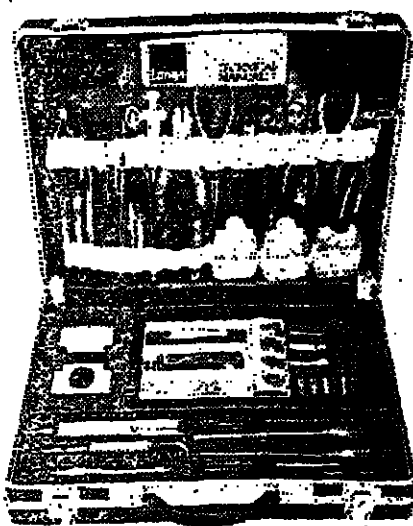
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## OFFICE EQUIPMENT XIV

# The office of the future

"THE OFFICE of the future"

is a familiar catch-phrase—handy as a concept, but confusing in the real world. This is because future offices will be built incrementally from today's offices and will rarely be the result of a dramatic leap suggested by the catch-phrase—and are, in part, the creation of the computer, the microprocessor and mini-computer memory, and the telephone and its developments.

The split between these two is not absolute, for the telephone itself now depends upon processors and memories in its advanced modes. But because the most recent developments are taking place within telecommunications companies (by and large), it is convenient to make it.

The office communications system now largely — and will more in the future — depend on the PABX, or private automatic branch exchange, the office switchboard which interconnects the office network with the public network.

In its simplest form, the PABX is simply a filter between a number of extensions and the outside world. The growth in the office communications market, however, depends to a very considerable extent upon the PABX becoming increasingly sophisticated, and taking on a wide range of facilities.

Throughout the western industrialised world, electronic or semi-electronic exchanges are now replacing the crossbar or electro-mechanical technology which has been standard for decades. It is electronic technology which will achieve the

office communications revolution.

All the larger communications companies now have visions of "an office of the future." To some extent, these will depend on the word-processor and the visual display unit which can call up and display information on a television screen on a desk.

But this technology will scarcely be able to work at all unless it is backed up by a communications network, carrying voice, data and printed information, which is several times more flexible, efficient and rapid than at present.

### Costs

Because of the high capital costs, it makes good sense to include as many facilities as possible within a single PABX system—hence the drive for more and more sophistication.

Within the next ten years, the dominant electronic/communications companies will introduce total office systems, including word processors, visual display units linked to computerised information retrieval systems, telephones with a wide variety of calling, holding and switching facilities, telex and facsimile terminals and data receivers.

The successful development of a total office systems approach in Britain will depend on whether or not the Post Office—which exercises a large amount of control over internal communications—can adapt its requirements to suit the needs of advanced offices.

Only large PABX's (over 100 lines) can now be sold direct to the customer by suppliers, and

a number of units available in Europe and the U.S. are not for sale here.

Some manufacturers—including IBM and IIT—have been lobbying hard to breach the Post Office monopoly over subscribers' apparatus, arguing that by freeing up the market, it will grow, and everyone will benefit.

Not unnaturally this initiative has perhaps attracted the support of the Conservative Party, whose chief ideologue and industrial spokesman, Sir Keith Joseph, warmly commended the idea, and added, for good measure, that the party was also looking at the idea of denationalising the postal service.

More surprisingly it has had support in recent months from Mr. Frank Chapple, general secretary of the Electrical, Electronic Telecommunications and Plumbing Union.

Mr. Chapple argued forcefully that the Post Office system kept the market at an artificially depressed level, and the healthy private competition would boost sales of equipment, and help safeguard—or even create—his members' jobs.

In such a highly charged atmosphere which now surrounds the question of Post Office monopoly, it is difficult to determine what are the objective facts. It has been the case

that sales of equipment in a number of "teething" problems have been sluggish, and it is under another name. Thus, when compared to the U.S. and the UK industry had only one investment in facilities and capability for the future. Its success in the "free" PABX market, now reckoned to be worth around £40m a year, leads one to ask what, if anything, British companies are doing to compete?

It seems that both Plessey and GEC have now decided not to develop their own business switching system, but to manufacture and market an already developed system under licence. The GEC product is licensed from the Canadian Northern Telecom Company, which now has a digital exchange known as the SL-1 which has been highly successful in North America, and which is also being licensed to Televerket in Sweden and Thomson CSF in France.

Plessey has adopted a digital exchange developed by the ROLM Corporation of California, and is now engaged in the production of the ROLM CBX Business Switch, and in obtaining Post Office approval for it.

The market is growing, and is beginning to fill out as other companies forge ahead with their own developments. The office of the future presses upon us.

It offers a variety of special switching facilities with stored programme control, together with a data acquisition facility, which is possibly over-sophisticated for the market, and thus is under-used.

Scott, Goff Hancock reckon, however, that it has undisputed leadership in the "free" PABX market, and took 40 per cent of that market, by value, last year. This is a dramatic reversal from two years before, when advanced crossbar exchanges, when none of the UK suppliers had any competing technology, 25 per cent of the market, followed by Thorn EMI with 19 per cent and IBM coming third among foreign-controlled companies, at 13 per cent.

While the 3750 is expensive—at nearly £500,000—it is

## Fierce competition in the copier market

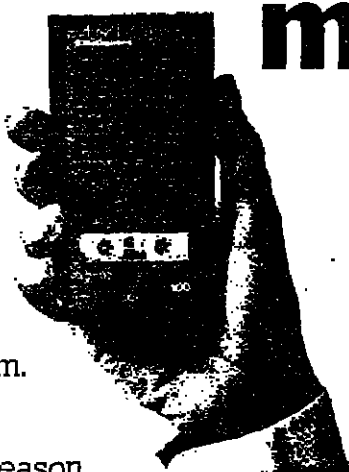
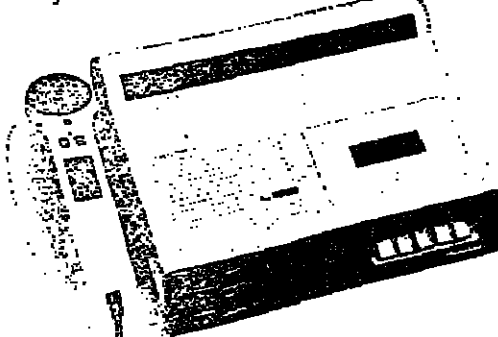
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The voice of word processing

NASHUA, THE Japanese copier company, describes the plain paper copier market in Britain as a "battleground." Competition in the middle and lower end of the market is fierce and with more and more companies entering this sector, the customer is faced with an ever-growing choice of reprographic equipment.

The vigour and success with which the "new" entrants have attacked the one-time monopoly of Xerox and Rank Xerox, coupled with the rapid development of reprographic technology, has made the market among the most swift-moving and turbulent in the office equipment sector.

This is particularly true of the plain paper copier market chosen by most companies as the starting point for an attack on Rank Xerox's market domination in the 1960s. Six years ago there were only five models of plain paper copier on the market in competition with those of Rank Xerox, but one year ago there were about 30. The Business Equipment Trade Association (BETA) claims around 16 new plain paper copiers have made their first appearance on the market within the last 18 months.

### Expansion

Such rapid expansion has provided the customer with a wide range of competing equipment from which to choose.

The distinction between copying and duplicating depends on the number of copies to be made and the type of equipment on which that number can most efficiently and economically be produced.

The point at which copying and duplicating merge depends on individual circumstances and upon factors such as total equipment configuration and considerations of required quality and speed.

Above 1,000 copies, duplicating merges into short-run printing and the advantages of offset technology with regard to price and quality become apparent.

The range of copy and duplication equipment on the market extends from low cost electrostatic copiers, spirit and stencil duplicators, to the most sophisticated copy/duplicating

for low volume, low cost copying or duplicating, the simplicity of a stencil duplicator or roll-fed electrostatic copier will probably best fit his needs.

When the customer requires the highest copy quality combined with the lowest cost the electrostatic copier/offset duplicator is probably the most versatile and economic means of production.

The copy/duplicating systems available at the high volume end of the market include plain paper copiers capable of copying and sorting medium quantities at speeds of up to 8,000 an hour. Some now include reduction or enlargement facilities.

Automated tandem duplicators can print both sides of a sheet of paper at once and can, for example, print 500 copies of a 200-page book, to collated stage, in one working day.

The development of the plain paper copier into high speed production has resulted in encroachment on the traditional duplicator market and in turn led to the development of copy/duplicating systems. High volume units present a challenge to the more traditional equipment of the company print room.

The customer approaching the reprographic market must therefore carefully consider his requirements. Factors such as total volume, cost per copy, copy quality, productivity, versatility and reliability must all be examined.

BETA suggests a five-point check list for the potential customer. This includes identifying copyflow requirements, assessing needs and systems compatibility, before placing detailed specifications with potential suppliers.

The state of the copier market owes much to the Xerox and Rank Xerox monopoly, protected by patents until the late 1960s. That monopoly allowed the company to finance the research upon which much of today's copier technology is based and to develop and expand the market.

With the advent of competition at the end of the 1960s, Nashua introduced its model 220 electrostatic copier in 1968 which brought with it cheaper prices and, in some respects, equipment offering superior facilities.

If customer requirement is sophisticated copy/duplicating IBM attacked the top end of

the market with its IBM Copier III and Kodak Ektagraph 100 and 150 range challenging the Rank Xerox 3666 and 7000 series in the copier/duplicator market for machines capable of 30,000 to 50,000 copies a month.

However, with prices somewhat higher than those of Rank Xerox, IBM's progress and market penetration is said to be steady rather than dramatic.

But the real competition came at the low to medium volume end of the market where were simple to operate and

Mitsubishi and Ricoh introduced low volume copiers which compared well with those offered by Rank Xerox.

In Britain, Japanese machines marketed by Kalle and Nashua have been joined by many other companies which realised the importance of obtaining a foothold in the expanding market.

The Japanese companies attacked the low volume market by offering small, low cost, high reliability machines which

CONTINUED ON NEXT PAGE

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## OFFICE EQUIPMENT XV

## The complex world of calculators

HOOSING AN electronic calculator at the cheap end of the price range, below about £20, is a first purchase of an electronic calculator, rather like choosing a can of engine oil.

The calculators, like the cans, vary in external appearance, but inside, the contents that matter vary little. In both cases, there is very little the intending purchaser can do to value the merits or otherwise of apparently similar products, even if it was worth his while to do so.

In the case of the calculator, the buyer would need to be highly versed in micro-electronics, a characteristic not common among purchasers of small pocket electronic calculators.

Most owners of small pocket calculators, with a limited range of functions, if asked why they chose a particular model, could be hard pressed to give more than a couple of reasons. Price would certainly come to their calculations, since simple electronic calculators, which add, subtract, multiply and divide and have a memory in vary in price from below £5 to earlier models—now out of vogue with retailers for their questionable reliability—to around the £20 mark.

The second and often deter-

mining factor taken into account when a buyer makes a first purchase of an electronic calculator, is appearance.

This varies enormously and reflects the dressing-up of the product to attract sales. There are miniature electronic calculators hardly thicker than a credit card and of the same size and there are more bulky models often described as being suitable for the desk as well as the pocket.

In practice such a compromise does not live up to the claim. The pocket calculator is designed for cheap, mass production, and it is true that there have been advances in the design and reliability of the metal oxide semiconductor integrated circuits that make up the heart of most electronic calculators since pocket models first came on the market in the early 1970s.

But the pocket calculator and the desk model are designed for entirely different roles. The pocket model is, by its design, of lightweight construction. The desk model, where these are conventional mechanical devices, are not designed for continuous rigorous use, day-in and day-out.

Only when a purchaser buys at the high end of the pocket calculator range can he or she

expect very much greater durability in the mechanical systems.

This recourse to potentially unreliable mechanical switching and key operations in most of the cheaper pocket electronic calculators now on the market highlights the greatest weakness of these useful aids.

## Advanced

For the layman, the juxtaposition of some of the most advanced micro-electronic circuitry available to the man in the street with mechanical switching devices may appear short-sighted corner-cutting.

Japanese companies, including the Sharp company, have recognised this weakness by introducing non-mechanical keys and switches. These are incorporated in a metal base plate, itself hardly thicker than a pencil, and work by touch.

Desk calculators, on the other hand, are designed for more punishing day-in and day-out use. Most models use mechanical switches and keys, but these are on a much larger scale, they are more robust and can, in general, be struck with- out risk of damage with a firmness that would quickly cut the life of a conventional pocket

calculator which relied on mechanical keys.

Electronic calculators also differ in their use of either light-emitting diodes or liquid crystals to display digits. The diodes are miniature for pressure glass tubes filled with rare gases which emit red or green light when activated.

The other form of display uses a thin film of liquid containing crystals which change colour under the influence of an electric current.

There are exponents of both types of display with the advocates of uncompromising robust design favouring the liquid crystal type as less prone to failure and unreliable operation than the glass emitters.

To counter this, it should be remembered that some of the most expensive scientific and business calculators use red light-emitting diodes, including the HP-92 Investor model from Hewlett-Packard, which has few rivals in the field of business and finance calculators.

Before giving more details of this versatile financial calculating tool, it is worth looking more closely at the desk calculators, as these and the pocket calculators, outsell all other types put together.

Desk calculators with miniature printers built-in, cost be-

tween £99 and £160.

Canon, Vatman, Casio, Litton with its Monroe model, Sharp, Texas Instruments, Walther, Sanyo, and Hewlett-Packard are among the leaders in the printing desk-top calculator market.

Most of the desk machines provide 10 or 12 digit displays compared with the eight digits common on most pocket calculators.

Desk models also differ in the logic designed into the miniature silicon chip-based integrated circuit.

Most of the simpler and cheaper pocket calculators use simple algebraic logic, where the simple arithmetic equation is fed into the keyboard from left to right, as it is usually written, so that  $12 \div 3 = 9$ , is keyed in that order.

Desk machines, in the main use business logic, where the same calculation would be keyed in the form  $12 \div 3 = 9$ . The way to identify whether the machine has algebraic or business logic is to look at the function keys. The machine will have business logic if it has the  $+$  and  $=$  on one key and the  $-$  and  $=$  on one key.

The choice of a different logic for desk calculators stemmed from conventional adding machines. Most makers of desk-

top calculators with printers accept that their machines are often little more than electronic adding machines, with memories.

Sharp advertises its EL 1057 10-digit desk-top printer as an "ideal adding machine replacement."

It has a two-colour ribbon and like most desk calculators which use standard mechanical printing, it prints automatically all negative digits in red and positive digits in black.

Machines which use heat sensitive paper for printing are cheaper to buy, but as the paper is more expensive, running costs are higher. Heat sensitive paper prints all digits in one colour.

Most desk-top calculators were not designed for complex calculations. The same cannot be said for the wide range of more specialised scientific and financial calculators, costing many hundreds of pounds.

The Hewlett-Packard HP 92 was described by one calculator retailer as the ultimate in financial calculators. Its range of capabilities is impressive, and provided its capabilities are used to the full, it may be considered good value, at £319 to those customers prepared to spend some time coming to terms with its complexities.

The machine has its own printer, but is a far cry from other printing machines that are used for little more than addition and subtraction. It is pre-programmed and may be used for compound interest calculations and leasing and can print out loan amortisation timetables and three types of depreciation tables.

It will also handle bond and note calculations, it has a built in calendar and may be used for the analysis of investment, net present value and internal rates of return, for up to 30 uneven cash flows. There are 38 addressable registers and the machine will print labels with statistics and the complete content of the memories.

The HP 67 and the HP 97 from the same company have greater flexibility than the Investor machine, as both may be programmed by the user. Data may be recorded in 26 storage registers through magnetic cards.

Programmes available from Hewlett-Packard include those for application in mathematics, statistics, electrical and mechanical engineering, business, surveying, clinical laboratory and nuclear medicine.

Users may write their own programmes on the spare magnetic cards supplied with the machine.

The company uses an algebraic operating system as its logic. This enables the user to work through a calculation from left to right, but where there are digits in brackets, for example, the calculations based on the AOS system will memorise the first bracket and the numbers and operations until the second bracket is closed.

The partial and final results are then calculated as in the rules of algebra.

Britain's Sinclair Radionics company, part-owned by the National Enterprise Board was one of the pioneers of the pocket calculator. It produces the Cambridge range at the cheap end of the pocket calculator market, the Oxford range of desk models and the Enterprise in a non-programmable and a programmable version. The Cambridge models are available in many shops at less than £5, making them among the cheapest on the market, and this low price and the stock clearance that it indicates is almost certainly a reflection of the company's desire to move away from the mass market for calculators and into more advanced types.

Paul Taylor

Lynton McLaren

## Copier market

CONTINUED FROM PREVIOUS PAGE

needed relatively few service centres.

Thus, in 1975, Nashua introduced the largest selling plain paper copier in the world.

As a result of the competition, Rank Xerox's share of new placements has dropped from 37,000 copies between closed figure which the company claims is still "considerably more than 20 per cent."

However, because of their providing cheap and reliable machines, Nashua was the market for high volume copiers, the company's share of new 9400 machines, which can produce more than 100,000 copies a month, by selling more

abandoned the lower end of the market to its rivals. In the past two years it has cut the price of its popular 680 and more recent 3100 machines by up to 45 per cent.

In addition, Rank Xerox will launch a new flat platen desk-top copier early next year.

So far, there has been little challenge from the Japanese at the very high volume end of the market. Nashua, for example, prefers to compete with Rank Xerox's 9200 and new 9400 machines, which can produce more than 100,000 copies a month, by selling more

of its 1200 range like the new 1250 which has a reduction capacity and produces up to 40,000 copies per month, or the 1260 which can produce up to 70,000 copies a month and has a 20 bin sorter, automatic document feed attachment and programmable keyboard.

It remains uncertain whether any company will challenge Rank Xerox in the market for machines capable of producing 100,000-plus copies a month. There are two major barriers against such an attack in this sector: first, the high development costs and, second, the service requirements because the larger and more complicated machine the more important servicing becomes.

The copier/duplicator market is, however, being attacked by rival systems. Gestetner, for example, has a system whereby facsimile stencils can be made from original documents allowing a large number of copies to be run off on a conventional duplicator without the need for a secretary to cut stencils.

For longer runs companies such as Gestetner and Rotaprint both offer a combination of copier and offset litho printer

with the copier making a plate to be used on the offset machine. This system clearly rivals Rank Xerox's 9200 and 9400 systems for quality and cheapness.

Elsewhere in the market, reduction copiers are becoming more widely available. Canon introduced a desk top plain paper copier offering A3 reduction down to A4 in January, while Agfa-Gevaert showed its Gevafax X22 flash-fusing plain paper copier with reduction facility at this week's London Business Equipment Exhibition.

The market for colour copiers has still to be identified. BETA claims there are at least three colour copiers on the market at the moment but the signs are that the economic climate has prevented rapid expansion and that colour copiers remain a specialist sector.

Rank Xerox, which pioneered the field with the 6500 copier featuring four-colour selector buttons, using plain bond paper, still has machines out on field test but says it has no plans to expand distribution.

Paul Taylor

Lynton McLaren

## The office of the future has just arrived.

The day it arrives, a Lexitron word processing system will probably hold up production for a bit. But after that, office production will never be the same.

A Lexitron system combines a typing keyboard, a TV-like screen that acts as "paper," a small computer, and a high-speed printer. All corrections—typing errors, additions and deletions, rearrangements—are made electronically on the screen before anything is committed to paper. Then, when everything is perfect, material is typed automatically at up to 660 words per minute. The information can be stored on tape or discs for permanent file, instant retrieval, or transmission over regular telephone lines for automatic reproduction at distant locations.

The recent acquisition of Lexitron Corporation gives Raytheon a firm position in this dynamic new field, and adds an innovative product line that is a natural extension of its established capability in data processing: intelligent data terminals, distributed processing systems, minicomputers, and telecommunications equipment.

Raytheon's data systems business continues to grow at an impressive rate. Sales growth this year has more than kept pace with the 60% increase posted in 1977. Add Lexitron, and the growth is even more impressive for this segment of our electronics business.

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## OFFICE EQUIPMENT XVI

## The working environment

MORE THAN a quarter of Britain's working population is now employed in offices and the number is growing, according to the Location of Offices Bureau.

It is estimated that these 5.8m employees spend at least a third of their lives in the office environment.

The rapid growth of office-based technology has helped highlight the economic role of the office worker. Together with the effects of greater worker participation this has increasingly focused attention on the quality of the office environment and the amenities available to the office worker.

Although sometimes a slow change, "environment" is losing its "dirty word" status. Management are becoming aware that improvements to the furnishing, decor and physical functioning of the office can result in improved productivity, efficiency and greater employee commitment.

High office rents in some areas have made space in pre-basement while staff mobility, and the economies of scale, have resulted in the design of flexible "work station" furniture systems.

However, the greatest impact on the office environment is new safety legislation and, in particular, the responsibilities

placed on the employer by the Health and Safety at Work Act. This Act has made safety a key selling point for office equipment and has placed a new emphasis on office safety.

Furniture must have rounded edges which will not snag on clothing, chairs and desks must be stable. Filing cabinets cannot be allowed to topple over and the power leads which feed desk-top equipment and "task lights" must not present a major office hazard. The use of VDUs requires carefully controlled ambient lighting levels while desk tops are designed to minimise reflected light glare.

New furnishing fabrics must

not only satisfy aesthetic conditions but also those of fire resistance and flame proofing. Britain's furniture industry has traditionally produced cheaper goods than its European counterparts. Therefore the UK buyer has become used to cheaper, and sometimes inferior, goods. Rising raw material prices have, however, pushed costs and as a result the Business Equipment Trade Association (BETA) believes the customer is becoming more critical and quality-conscious.

The association says there is every indication that if users comply with their legal and moral responsibilities then

there will be a "very healthy future" for the UK furniture industry as companies re-equip offices.

Although Britain's office furniture industry is still a net exporter, reduced price differentials have increased the level of foreign competition and also therefore of quality.

The growth in electronic office equipment could also have a dramatic effect on office furnishings with desks and cabinets designed specifically to take the equipment.

Deskings in the future may well come equipped with its own power cables led through the legs from floor points, task

lighting and built-in provision for computer terminals, telephones and other equipment. In the design field the marrying of wood, metal and plastics has provided an opportunity to tailor the use of materials to the precise function required, while also increasing the design potential.

It is perhaps in the field of temperature control that UK most lags behind the U.S. and Europe. High energy prices have tended to reinforce the reticence of management to enter the field of sophisticated air-control systems, although the use of computer equipment which requires careful temperature control could change this situation.

More emphasis is placed on the use of blinds on east, south and west-facing windows which serves the dual function of eliminating unwanted sunlight glare and heat. The increasing use of carpeting also serves a dual function: evening out heat distribution while also reducing noise levels.

These various influences are probably nowhere more apparent than in the Property Services Agency Supplies Division.

The Civil Service is the single largest employer of office staff and PSA Supplies has, among its many functions, the responsibility for designing and supplying the civil estate including the Home Office departments, Ministry of Defence establishments and the Post Office with office furnishings.

PSA Supplies deal with everything from floor coverings, curtains and desks to pictures, posters and paints. This year, PSA will supply some 3.5m sq. meters of carpet, 300,000 chairs and 380,000 light fittings. The furniture supplied by PSA is either designed "in house" and then put out to tender or bought in from manufacturers' standard ranges. PSA buys-in reference to a booklet prepared where there is only a short run of requirements, for example in British embassies and overseas offices.

Mr. E. L. Pinfold, assistant controller at PSA Supplies, explains: "The equipment we procure so far will probably prove to be functional; up to to be a totally new office furni-

ture system, called the Whitley system, which is about to go into full production. This system, which is about to go into full production, will form the 'standard' furniture system supplied by PSA within three years and is expected to be the standard civil service department fitting for the next 20 years.

The development, which the designers say has already had an impact on commercial design, is revolutionary in that its flexibility is achieved by the relatively simple concept of "dimensional co-ordination". This means that all the units, desk tops, shelving, screening, cabinets and drawers are based on multiples of a standard length. This enables different units to be grouped together in a flexible work station arrangement which will suit any office layout.

Work stations can be grouped together according to employee function to provide work groups while desk tops can, if necessary, be combined to form conference tables.

Special features include triangular non-slip tops for electronic equipment which can be used individually between desk tops or combined into square equipment tables. Within private industry similar systems are now appearing on the market from companies such as Hille International with its Stephens System based on a 80 cm module. Hille also offers Task-AM. Lightline systems, a full design consultancy.

Similarly, Carson offers a comprehensive planning and advisory service geared to its 900 office furniture system. In the area of office amenities, the continuing rise in the cost of providing personal services has resulted in more interest in automatic vending devices, for dispensing a variety of food and drink. The main trend in automatic drink dispensers is towards "in-cup" systems which have advantages over their predecessors in the areas of hygiene, simplicity of operation and maintenance. By 1988 it is estimated that 50 per cent of all new machines sold will be of the in-cup type.

The agency was also instrumental in introducing the concept of colour schematics. Basically, this is a system of colour matching which can be used by a layman to determine which colours will match, by reference to a booklet prepared by the department.

The division's design team were also responsible for the creation of the Job Shop image, now a common feature of many streets. However, the new machines sold will be of the in-cup type.

Paul Taylor

## Leasing schemes grow in popularity

ONE-QUARTER of all office equipment marketed in the UK is sold through lease finance schemes. There are now around 32 leasing companies specialising in computers and over 20 which deal in office equipment.

The most popular item is the copier—around 80 per cent are lease financed but leasing extends to typewriters, office furniture, franking machines and computers.

Last year 28,000 contracts were signed with UK businesses. Of the total £875m made by leasing companies, £184m was made by the computer and office equipment sectors. At least 70 per cent of the contracts were non-computer contracts but in value terms only 10 per cent was made in leasing office equipment.

Equipment manufacturers use two main methods of securing lines of lease finance. They either contract with established leasing companies to provide the facility—companies such as

Anglo Leasing, Hamilton Leasing, IBOS, Bomakers, or they set up their own leasing subsidiaries funded by their own profits and through conventional money markets.

Leasing is regarded as one of the most important aids to sales available.

One of the biggest advantages in leasing office equipment is that it is virtually 100 per cent financing since no deposit has to be made by the customer or lessee, although an advance rental may be paid, depending on the equipment and leasing company. The only exception to this is if the customer is a potential credit risk.

## Eligible

When the leasing company negotiates a contract he investigates the financial structure of the business, the size of the company, the age of the company and field of business the facility—companies such as

Office equipment is eligible for first-year investment allowances made by the Government to encourage investment in new equipment. So equipment avoids tax for one year, the equivalent of "borrowing" money free of charge for a year which can be a big drawcard for a company which intends to invest in either a lot of equipment or expensive, new technology items.

The equipment remains the property of the leasing company and at the end of the contract term—usually between three and five years—returns to the leasing company. The lessee can take out a second lease if he wishes when the rentals are reduced to a fraction of the first-term amounts.

If the leasing company sells the equipment it must go to a third, unconnected party or the first-year allowances are nullified but some leasing companies provide a guarantee for re-purchase to manufacturers at

the end of a contract.

It is virtually impossible to get out of a contract once signed without incurring considerable expense for the lessor. It is therefore important for any company leasing equipment to check that the machinery being leased is what is required and not what the salesman would have a company take. With the advance in technology of office equipment in recent years, leasing companies have become much more flexible in allowing a change of equipment to meet changing times. Business growth also makes an existing machine obsolete.

Well-established, well-run companies should have little difficulty in getting a lease. Leasing is a trading expense and the payments simply go out as "costs" each month. This means that capital expenses of a company are left untouched by leasing equipment so to this extent, leasing can be a useful credit line.

Newer companies may have a few more problems. As mentioned earlier, leasing companies like a track record of a company—going back at least two years—before taking on a potential risk contract.

Most office equipment leasing companies have a large number of small contracts. Anglo, for example last year signed about 12,000 contracts averaging £1,000 each. This compares with an average £5,800 for office equipment leasing companies including computers.

The future for the office equipment and computer leasing companies looks strong at the very least. Newer, bigger, more expensive equipment coming onto the market means leasing companies can offer better terms since their overheads are easier to absorb. And the demand for leasing more expensive equipment is likely to run on par with the cost increases.

## The brain drain stops here.



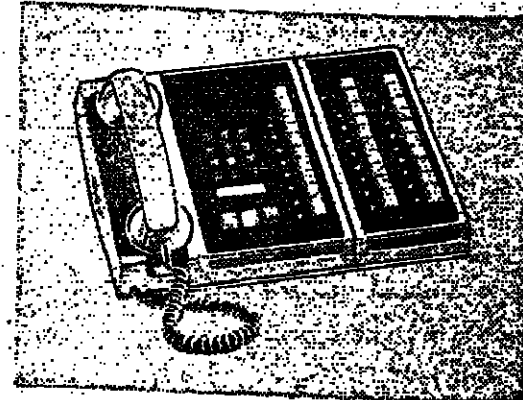
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# Tests for the PM's pay norm

IF A market researcher had set out to find two more different constituencies in which to test the Government's popularity, he could hardly have done better than the two in which Labour is defending seats in by-elections on Thursday. Pontefract and Castleford is the kind of constituency to which all prospective Labour candidates aspire but where only Yorkshiremen born and bred into the Labour movement need apply. It has been rock solid Labour since it was formed in 1950, and the late MP, Mr. Joe Harper, had a majority of 23,242 and a working class base to match.

Two hundred miles to the north, just over the Scottish border, Berwick and East Lothian is the kind of seat which even Labour party workers are surprised to have won. Only the small old mining area on the constituency's eastern fringe feels like Labour territory. The rest, with its fertile farmland and rolling moors, has all the outward signs of typical Tory stalking ground. Mr. John Mackintosh, the MP who died this summer having established his own particular brand of radicalism, was himself doubtful whether he could retain it at the next general election. The seat has changed hands eight times since 1923 and the Tories need a swing of only 2.9 per cent to win it now.

Between them, the two by-elections have all the ingredients of an Alice Through the Looking Glass election. In Berwick, the Labour candidate, Mr. John Home Robertson, is a wealthy young local farmer who looks far more like a Tory than do most Tories these days. And in Pontefract staunch Labour voters protest about dole queue scroungers in a way that would have made speakers

at the recent Tory conference seem positively liberal. The underlying irony in both constituencies, of course, is the fact that Mr. Thatcher's offer on free collective bargaining is closer to what the unions say they want than what is being offered by the Labour candidates, who, in both areas, are clearly feeling very uneasy about the whole question of pay policy. Questioned last week about his attitude to the Government's sanctions on employers who breach the pay guideline, Mr. Home Robertson could only answer "Gosh."

It is an unusual experience for Pontefract to find itself under the political microscope. A largely industrial constituency where even the farming land is overshadowed either by pits or great belching power stations, its allegiance to Labour has been taken for granted in the past. In Pontefract, the saying goes: "If you put a red scarf round a donkey's neck people would vote for it."

This time, however, the Labour machine is taking Pontefract very seriously. For Ashfield, the Nottinghamshire mining seat with an only slightly smaller majority, was lost by Labour to the Conservatives. Ministers and neighbouring MPs are being wheeled in daily to help the local candidate, Mr. Geoffrey Lofthouse, to maintain Mr. Harper's majority, and so provide what the regional organisers say should be a demonstration of the grass root support for the Prime Minister's

the one held by the Tories in Ashfield. He is an old Harrovian, and his father is a Conservative MP. He has that brand of apologetic public school confidence which makes it difficult for even hardened Labour housewives to slam the door in his face. There were signs last week that he was succeeding in winning over some disillusioned Labour voters.

According to the Labour organisers, the biggest difference between the Pontefract

and Ashfield by-elections is that the rate of inflation has now more than halved. All three parties contesting the seat agree that inflation is the main issue though the Liberal, a former Labour councillor from York, is putting more stress on the local housing issue. Exactly how the various candidates interpret the word inflation varies.

Labour likes to see it primarily in terms of prices and the Government's success in reducing the rate of increase. Mr. Lofthouse, one is told, is absolutely loyal to the Government's line on pay and has the full support of the local electorate who appreciate the "stern" way Mr. Callaghan is tackling the problem. The question of sanctions tends to get brushed under the carpet as being mere detail. Voluntary restraint has worked miracles so far, according to Mr. Lofthouse, and there is no reason why it should not continue to do so in the future. Mr. Page, on the other hand, lays more emphasis on the pay side when discussing inflation. Like Mrs. Thatcher, he is trying to drive a wedge between Labour and its traditional supporters by attacking the whole concept of a rigid pay norm. The employment implication of the Tory's approach (extensive pay increases mean fewer jobs) tends to get lost on the doorstep in his enthusiasm to deride the 5 per cent limit and exploit the differences between the Government and the unions.

The voters of Pontefract, however, personally the difficulties Mrs. Thatcher faces in trying to woo traditional Labour voters. Voting Tory in Pontefract is like denying your parentage. Though the constituency is within the Yorkshire region of the NUM and the realm of Mr. Arthur Scargill, local miners do well out of productivity bonuses and seem to accept the need for some restraint on pay. Nor, judging by those I spoke to last week, are they prepared to believe that the Tories would honour their promise of free collective bargaining. Rather they fear the employment implications of Mrs. Thatcher's policy.

In Pontefract, the present differences between the Government and the unions seem to be regarded as a largely temporary phenomenon which still leaves the two sides with far more in common than divides them.

All the candidates in Pontefract have been trying to raise other issues. Mr. Page says that in Pontefract unemployment seems to be of much lesser importance than inflation.

In Berwick, too, inflation seems to be the main issue though there is also a wide range of local issues which crop up on the doorstep.

As in Pontefract, the party political conferences seem a world away from Berwick where, until the past few days, there seems to have been very little interest in the campaign. But then, Mrs. Margaret Marshall, the dauntless positive Tory candidate, decided to make the best out of what others might have regarded as the difficulties created for her by the apparent split in the Tory party hierarchy over pay. She challenged Mr. Home Robertson to a public debate on pay. Mr. Home Robertson, who, though good on the doorstep, is not impressive on public platforms, rejected the invitation but not before he had exposed his ignorance of the official party line on pay to the Press.

Miss Marshall, whose own position on pay has moved closer towards Mrs. Thatcher's as the campaign has progressed, fails even to ask the Scottish Nationalists or Liberal candidates to join the debate. Both



Mr. Roy Hattersley, Secretary of State for Prices, and the Labour candidate go "walk about" in the Berwick by-election.

the main parties regard Berwick as a two-horse race though what happens to those votes cast in favour of the minority parties last time is crucial in such a tight contest. A collapse in the SNP vote would help Labour provided the Liberal vote holds. The local Nationalist Party has not been helped by the bitterness which has surrounded the choice of their candidate. The resident candidate was ditched at the last moment and replaced by one of the national party's leading lights, Mrs. Isabel Lindsay.

Judging by the reaction of people on the streets at the weekend, the SNP will do well to hold its deposit. But the news as the campaign has progressed, is far from being all good for Labour. Mr. Mackintosh's success was not only to cement the traditional working class vote

in the old mining towns but also to seduce traditional Tory voters with his own highly individualistic kind of radicalism. He put his "personal vote" at more than 500 but this could be an under-estimate and Miss Marshall is careful never to say anything but flattering about him.

The new Labour candidate, who was a close personal friend of Mr. Mackintosh, has the advantage over Miss Marshall of being a local man but a number of people were saying last week that without Mr. Mackintosh to vote for they did not see much point in voting at all.

A Glasgow-born, chartered secretary, Miss Marshall is making much of the natural links between Scottish canny and the Tory policy of rewarding hard work and letting the lazy feel the pinch. When the Conservatives lost the seat to Labour, it was partly because of the intervention of the Liberals who took just under 6 per cent of the poll. Although the Liberals, like their counterparts in Pontefract, say that their chances have not been harmed by the

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Sir,—The delightfully eponymous Doug Anthony, Australian Deputy Prime Minister and spokesman on minerals (in Mining News on October 17) has, I think, the right idea. "What he is saying is to what extent we can allow a small group of people, a manipulated group of people, to stand in the way of a development of tremendous national and international significance."

Indeed, and the offer of consideration seems generous. If, of course, in the light of his previous observation (ibidem) that under Government legislation allowing Aborigines could not without consent for mining on their land. This approach seems to be the trendy one: see the remark attributed earlier this year to a leader of the Patriotic Front, so-called, that Mr. Smith should be tried and shot.

Perhaps during his considerations Mr. Anthony does take into account the consequences both of the mining and of the payment to them of cash, to the Aborigines, who, as we all know from Mr. Anthony's candour, have no say in the matter. Also that this really is the only question irrespective of whether the Aborigines are manipulated (futile party spokesmen) or not. It may even turn out to his pleasant surprise that the manipulators have the welfare of the Aborigines at heart. How convenient it would indeed be that smallness in numbers of protagonists rather than the merit of a case should determine an issue.

What was not reported was that there are already strong grounds for believing that any encroachment upon the territory of the Aborigines leads to or hastens their physical and spiritual destruction. What price the posturing of Perfidious Albion's Ministers scurrying around the world seeking peaceful settlement, majority rules, minority safeguards, democracy, civil rights, etc.? For may we not take pride in the knowledge that it is largely British capital companies that develop Australia's minerals in pursuance of such equal treaties?

We once played cricket with the Aborigines: I think I detect a change in the rules. Andrew Crocker, 2, Ovington Square, S.W.3.

## Letters to the Editor

document contains the statement... it is not considered that the development of a larger nuclear power programme would give rise to security arrangements materially different from those at present." United Kingdom Atomic Energy Authority, 11 Charles II Street, SW1

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## COMPANY NEWS

## Newman-Tonks ahead

AS FORECAST in March Newman-Tonks maintained second half taxable earnings at £1.14m, against £1.18m, for fulltime profit for the year to July 31, 1978, to improve from £1.33m to £1.31m. Sales in the metal hardware manufacturer were £2.29m ahead at £22.35m.

At mid-term the directors said that budgets for most of the group's UK companies were reasonably encouraging and they anticipated the second six months to be similar to the previous year's.

The tax charge for the year, based on the recently issued SSAP 13 for deferred tax, was at £346,000 (restated £360,000) for a net balance of £1.27m compared with £1.57m. Earnings per 25p share are stated at 12.74p (13.16p) or 9.79p (8.13p) on the old basis for deferred tax.

The net total dividend is raised to the fore at 4.0535p (3.63p) and costs £400,000 (£338,000)—by a final of 3.1535p to be paid on December 12. In addition shares issued since the year end as part consideration for the acquisition of Econa, carry the right to receive the final and this costs £113,000. As known the offer involved the issue of £3.72m Newman-Tonks shares and a payment of £1.8m cash.

## WIGHAM POLAND SAUDI LINK

Wigham Poland Group has formed a new company, Abdallah Wigham Poland, to specialise in insurance emanating from Saudi Arabia, including construction

## First half profit for E. Upton

Following its recovery to a £310,667 pre-tax profit in the second half of 1977, E. Upton and Sons reports a £76,325 surplus for the 26 weeks to August 15, 1978, compared with a £112,151 pre-tax loss last time.

After tax of £29,700 (£36,625 credit) net profit was £26,625 (£36,151 loss) and earnings per 25p share are shown at 2p. The interim dividend is unchanged at 0.75p. Last year a 1.5p final was paid.

Turnover of the departmental store and retail shop operator for the half was £3.29m against £2.08m last time.



Mr. Selim Zilkha, chairman of Mothercare, who is due to report interim figures.

## Phoenix launches new pension scheme

A NEW plan designed to enable employees to save towards retirement in a tax efficient manner and also to boost the pension provided under the company pension scheme has been launched by Phoenix Assurance.

The voluntary pension plan is available to employees who will not be eligible to receive the maximum pension scheme benefits allowed by the Inland Revenue. Under this scheme which is arranged by the employer, the employee pays monthly contributions into a tax-exempt fund. The minimum monthly contribution is £10 and the maximum amount payable is governed by Inland Revenue restrictions amounting overall to 15 per cent of salary including the contributions already being made to the main pension scheme.

Phoenix accumulates the contributions in a tax exempt fund. The employee is credited with interest on his fund monthly at a rate guaranteed to be not less than the Building Society Association recommended mortgage rate at the time interest is credited. On similar funds Phoenix is currently paying 10 per cent—one half per cent above the BSA rate. There is, however, a 4 per cent reduction to the declared rate for the first two years' contributions to allow for initial cost.

On retirement, the employee can take a completely tax-free cash sum from his accumulated account up to the revenue limits. The remainder of the fund, if any, is then used to boost pension payments in a variety of ways. If the employee should die before retirement,

## BOARD MEETINGS

**TODAY**  
Interim—Bishopsgate Trust, Duvel, Pictorial Imports, Cold Storage and Supply, Mothercare, Outright Investment Trust.  
Final—Rugland Distillers, Middleton Hotels, C. B. Pearce, Pressac.

**FUTURE DATES**  
Interim—Border Breweries (Wrexham), Nov. 15  
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Nov. 17  
Nov. 18  
Nov. 19  
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Dec. 31

## BIDS AND DEALS

## Macdonald Martin block sold

Foremost-McKesson Inc. has placed with various institutions its holdings of 326,738 "A" ordinary and 100,000 "B" ordinary shares in Macdonald Martin Distillers. The holdings represented approximately 12.5 per cent respectively of each class of shares.

Foremost-McKesson will continue to hold the import agency for a number of brands owned by Macdonald Martin's subsidiaries and the relationship remains unchanged as a result of it ceasing to be a shareholder in Macdonald Martin.

Bonser shares, representing 9.77 per cent of the equity. The offer remains open for acceptance.

**GREAT PORTLAND ESTATES PURCHASE**  
Great Portland Estates has agreed to acquire a 50 per cent share in 17/17A Newman Street, W1, from Brigley Group in a deal worth around £788,000.

The purchase price is to be met by the issue of 375,000 Great Portland shares, which have been placed through the market. Brigley says it will use the cash to reduce borrowings.

The property has a gross area of some 20,000 sq ft.

**COMPTON WEBB**  
Compton Webb has increased its holding in J. Clayton Sons & Co. to 1.8m shares (18.4 per cent).

## REVERTEX

Revertex Chemicals has received 11.3m from its South African subsidiary and diluted its holding.

The company has sold a stake in Revertex South Africa to a subsidiary of the South African Mutual Life Assurance Society for £720,000. The subsidiary has also repaid a £394,000 loan to the parent company.

## KAYE/BONSER

The Board of KAYE ORGANISATION announces that acceptance for the unconditional offer for the shares of BONSER ENGINEERING, not already owned by Kaye have been received in respect of 1,180,131 shares, representing 92.62 per cent of the shares subject to the offer.

## SHARE STAKES

Greenbank Industrial Holdings—Thornthorpe Trust has sold 50,000 shares and now holds 1,005,555 (3.43 per cent).

Croda International—Sir Frank Wood, director, has bought jointly with his wife 50,000 deferred ordinary shares.

Denbyware—Interests of Mr. L. Simons including Intercom Inc. amount to 1,117,992 shares (26 per cent). Previous interest 27.56 per cent.

## Daejan Holdings

On October 19 a private company within the Freshwater Group purchased from Mr. S. I. Freshwater 500,000 ordinary shares of Daejan at 120p per share.

Mr. S. E. Freshwater has a beneficial interest in the purchasing company and Mr. L. L. Robin and Mr. D. Davis, as directors of the company, have a non-beneficial interest.

Bell and Sims: May and Hassell now holds 41,530 shares (10.38 per cent).

Britannic Assurance as at August

## Public Works Loan Board rates

Effective from October 1st			
Years	By EIP	At maturity	By EIP
Up to 5	11 1/2	11 1/2	12 1/2
Over 5, up to 10	12 1/2	12 1/2	13 1/2
Over 10, up to 15	13 1/2	13 1/2	14 1/2
Over 15, up to 25	14 1/2	14 1/2	15 1/2
Over 25	15 1/2	15 1/2	16 1/2

## Turnover and profits substantially increased at half-year

**RESULTS** The profit of £1,757,000 before taxation represents an increase of 27.9% over the comparative period last year. Margins are still affected by the shortage of work in the UK and the record profit has only been achieved by another substantial increase in the Group's activities as turnover increased by 45.8%. The Group continues to trade successfully overseas but competition for new work is keener than in the past.

## DIVIDENDS

The Directors have declared an interim dividend of 1.16666p net per share. This is equivalent, with the associated tax credit, to 1.66666p per share, compared with 1.51515p per share paid last year.

## PROSPECTS

The present level of the order book ensures a satisfactory performance during the second half of the current year and into next year. In an extremely competitive market, both at home and overseas, the Group is making every effort to ensure that its successful trading record continues.

## RESULTS IN BRIEF

	Half-year to 31.7.78	Half-year to 31.7.77	Year ended 31.7.78
Turnover	£700	£700	£700
Profit before tax	1,757	1,373	3,113
Profit after tax	842	653	1,495
Earnings per share	5.06p	4.41p	10.88p

## FINANCE FOR INDUSTRY TERM DEPOSITS

Deposits of £1,000-£25,000 accepted for fixed terms of 3-10 years. Interest paid gross, half-yearly. Rates for deposits received not later than 31.1.78.

Terms (years)	3	4	5	6	7	8	9	10
Interest %	11	11 1/2	11 1/2	12	12 1/2	12 1/2	12 1/2	12 1/2

Rates for larger amounts on request. Deposits to and further information from The Chief Cashier, Finance for Industry Limited, 91 Waterloo Road, London SE1 8XP (01-828 7822, Ext. 177). Cheques payable to "Bank of England, a/c FFI." FFI is the holding company for ICGF and FCI.

## LOCAL AUTHORITY BONDS

Authority (telephone number in parentheses)	Annual gross interest	Minimum payable	Life of bond
Barnsley Metro. (0226 203232)	11 1/2	4-year	250
Bradford (0271 25577)	11 1/2	4-year	500
Chorley (02572 5011)	11 1/2	4-year	1,000
Knowsley (0251 548 6555)	11 1/2	1-year	1,000
Manchester (061 236 3577)	10	1-year	500
Poole (02013 5151)	10 1/2	1-year	300
Preston (0437 4551)	10 1/2	1-year	1,000
Preston (0437 4551)	10 1/2	1-year	1,000
Redbridge (01-478 3020)	11 1/2	4-year	200
Salisbury (0729 24265)	11 1/2	1-year	100
Southend (0702 49451)	10 1/2	1-year	250
Woking (0432 505051)	11 1/2	yearly	1,000

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## CIVIL ENGINEERING CONTRACTORS

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## ISSUE NEWS

## Arncliffe placing at 42 1/2p

Leeds based housebuilder, Arncliffe Holdings, which is headed up by Mr. Manny Cusson, chairman of Waring and Gillow and Leeds United football club, is coming to the market this week by way of a placing of just over a quarter of its equity at 42 1/2p per share.

Capel-Cure Myers will be placing 1.3m ordinary 10p shares—26 per cent of the capital—indicating a market capitalisation of around £25m. After the placing, Arncliffe will probably have somewhere between 175 and 200 shareholders.

The company first had thoughts of going public two years ago but the drop in the market caused the directors to shelve their plans.

Because of the smallness of the issue (only £32.5m) will be raised for existing holders who are selling a placing is preferable to a straight offer for sale.

Arncliffe's main areas of activity are around Yorkshire, Lincolnshire and Derbyshire, though the directors do intend to expand beyond these areas.

Between the years 1971 to 1977 (October) the company has built 1,150 homes on 31 sites and it is estimated that a further 270 homes will be completed by the year ending this month.

Sales have grown from £1.12m in the 12 months ended October, 1972, to £1.75m in 1977. Over the same period profits before interest and undeveloped property sales rose from £260,000 to £476,000. In 1973 profits before tax were £175,000, but that included £12,000 on property sales. In 1977 profits came to £333,000, compared with £306,000 in the previous year.

In the six months ended April 30 last pre-tax profits were £284,000 (including property profit of £47,000) on sales of £1.7m. The company has disposed of a number of sites which had been held for commercial development. This has resulted on some saving

in interest charges which is reflected in the half-time figures. The interest charge is shown at only £30,000 against £142,000 for the whole of the previous year.

The directors are forecasting that pre-tax profits for the year ending at the end of this month will be £550,000 including £28,000 attributable to sales of land and commercial sites.

On this basis the directors expect to pay a dividend of 2.01p in respect of a full year they would expect to pay total dividends of 2.53p per share.

Assuming corporation tax of 32 per cent the p/e on the placing price of 42 1/2p is 6.8 or 3 on the low tax charge the company is expecting. The dividend cover would be 2.4 or 4.6 times.

The annualised yield is 8.9 per cent.

Last October Arncliffe had short-term debt in its balance sheet of £1m compared with shareholders' funds of £1.65m. Last April the bank overdraft was £53,000 against shareholders' funds of £1.94m.

Net tangible assets per share are shown at 39p or 36p including land at market value.

**comment**

Comparisons between the ratings of other quoted housebuilders and Arncliffe are complicated by the wide spread of ratings in the house market. However, the fully taxed p/e of 6.8 and yield of 8.9 per cent backed up by assets of 56p (taking market value for land) appears a reasonably attractive rating and a small premium looks likely when dealing starts on Thursday.

The profits record looks good but Arncliffe has been coming up from a low base. It is dependent upon the private house market (it has never done any contract work for a local authority) and so at present Arncliffe should be having a fair ride. Private housing starts are up 14 per cent so far this year.

## CAMRA shares on offer

The pub-owning offshoot of the Campaign for Real Ale, CAMRA (Real Ale) Investments, is hoping to raise £172,500 by a public issue of shares that the business can continue expanding.

From tomorrow 150,000 £1 shares will be available at a price of 115p each.

The company was launched in 1974 with the objective of acquiring and running a chain of public houses. Between then and August 1978 five run down pubs were acquired which were renovated and reopened. It now sells 24,000 pints of beer a week.

A further two pubs have been purchased recently and an agreement is shortly to be signed with the National Trust to take a lease on another one.

Break even was achieved in 1977-78 and during the 24 weeks ended the middle of last July CAMRA made a trading profit of £8,068.

The board is confident that the second half will show an advance on the first. Dividends however are unlikely before late 1979 or early 1980 when profits have recouped the early start up losses.

Copies of the prospectus can be obtained from the company at 31 Hills Road, Cambridge.



You might need to know that Olio Sardines Ltda. of Sesimbra is wholly owned by Isaac Frisch of Bow.

You might not know you can get facts like this from Dun & Bradstreet.

Dun & Bradstreet are involved in a lot of things you might find unexpected. Knowing who owns whom is just one.

Our publication called, aptly enough, 'Who Owns Whom' can give you business ownership facts from here to Hong Kong, from Portugal to Peru. And we have 47 more publications holding masses of international information for different business needs.

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**BY LODESTAR**

## WALL STREET

## NEW YORK | 19

[illegible]

**BY OUR INSURANCE CORRESPONDENT**

In assessing the merit of this second claim, the judge had to balance the risk of attack against the amount of money to be carried. As to generalities, he had this to say: "I find it

common sense that insurers providing both employer's liability and money insurance to the same policyholder should now align their requirements under both policies in the interests of risk reduction both as regards loss of property and in

... King (F, 23)	126.2	-2.2	30.7
... King (F, 23)	239.8	-1.2	60
... King (F, 23)	104.0		27.9
... King (F, 23)	143	-1	30.0
... King (F, 23)	119.6	-3.0	42.2
... King (F, 23)	41	-0.2	50.2
... King (F, 23)	399.1	-1.9	33

41-33	FILE	1	4	DIS.
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181 1 101 United States 1 171

3751	2118	Cons. Bathurst...	35
1950	1614	Consiliner Gas...	173
514	518	Cosmos Magazine	83

8154	32	Daniell Mines...	777
111	7014	Dome Mines .....	991
10512	5414	Dome Petroleum	814

30	20%	MetLife.....	28
35 1/2	28 1/2	Monroe Corp.....	35 1/2
4	1.90	Mountain State R	3.05

6 1/2	3.55	Onkoma Petri'u	3.85
3 1/2	1.12	Onkoma Petri'u	1.25

[illegible]

5.7	S.K.F. 'B' Krs...	625	+1.0
-	skani Enskibla..	148	-1
-	Tandrig-B' (Krs)	60	+2

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FIN.	BSL. OK	TU. 6
6	Baker-Smith	12.25

4.4	Damervey	13.10
4.9	Dukes	10.2
	11.1 Affirmation	12.3

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## INTERNATIONAL CAPITAL MARKETS

## EUROBONDS

BY NICHOLAS COLCHESTER

## Black Friday for dollar bonds

THERE WAS no way in which the dollar sector of the international bond market could resist the pressures to which it was subjected last week. The dollar fell by 3.2 per cent and the D-Mark to DM 1.81 and to all six time-love by Morgan Guaranty's trade-weighted calculation.

There was a shocking set of money supply statistics in the U.S. and the U.S. federal funds rate rose by a quarter of a per cent. The six-month offered rate on Eurodollars went from 10 1/2 per cent to just below 1 per cent by the week-end. The result was an unrelenting decline in dollar bond prices, and Friday was the market's worst day so far this year.

The fall in prices was most severe at the shorter end of the market. The market appeared to be catching up with a relative deterioration in medium and short-term bond prices which had already taken place in the U.S. As the prospective peak in U.S. short-term rate rises on the aspect of an imminent rate hike, the dollar market spread out along the maturity

not surprising to hear that one of the rare new dollar issues, the convertible for Central Telephone and Utilities Corporation, was proving hard to sell. The market felt that the 12 per cent conversion premium was too steep for utility share and that the margin of yield over the ordinary shares was too slim.

Two factors combined to make a rather nervous week in the DM sector. Although the German bankers may have shown restraint in shaping the current month's calendar of DM bond issues, the market still regarded the total of DM 1.2bn (including the subordinated agencies) as a month's worth of issues. At the same time, the Bundesbank, by its actions last week, showed its determination to squeeze out of

BONDS INDEX AND YIELD				1978			
	October 20	October 13	High	Low	October 20	October 13	High
Medium term	97.76	97.82	98.21	98.29	99.84	99.84	99.84
Long term	97.51	97.55	98.26	98.25	99.87	99.87	99.87

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## CURRENT INTERNATIONAL BOND ISSUES

Borrowers	Amount m.	Maturity	Av. life Years	Coupon %	Price	Lead manager	Offer yield %
U.S. DOLLARS							
††Canada	400	1983	5	9	100	Morgan Stanley	9.20
††Canada	350	1998	20	9 1/2	100	Morgan Stanley	9.46
†Banque Exterieur d'Algerie	40	1985	7	7 1/2	100	National Bank of Abu Dhabi	7.44
†Gotabanken	25	1988	10	6	100	S. G. Warburg	6.09
†Central Telephone & Utilities Corp.	40	1993	—	7	"	Dean Witter Reynolds	"
†Long Term Credit Bank of Japan	75	1985	7	5 1/2	100	Crédit Suisse First Boston Credit Lyonnais	5.32
D-MARKS							
†Marudai Food	50	1987	—	3 1/2	100	Deutsche Bank	3.5
†Banque Exterieur d'Algerie	100	1985	6	7 1/2	100	DG Bank	7.25
†Argentina	150	1988	8	6 1/2	99	Deutsche Bank	4.64
††Eurofima	80	1988	8 1/2	5 1/2	99	Deutsche Bank	5.58
†Austria	150	1990	9 1/2	5	100	WestLB	5.75
††Commerzbank Int.	100	1983	5	5	99 1/2	Comerzbank	5.17
Bank America Corp.	150	1990	12	5 1/2	"	Deutsche Bank	"
City of Copenhagen	75	1990	7 1/2	6	99 1/2	Deutsche Bank	6.06
†Olympus Optical	80	1985	—	3 1/2	"	Deutsche Bank	"
ECSC	150	1988	10	5 1/2	99	Deutsche Bank	5.885
SWISS FRANCS							
†American Express Int. Banking Corp.	40	1993	n.a.	3.5	99	Swiss Banking Corp.	3.58
LUXEMBOURG FRANCS							
†Solvay Finance	500	1985	7	8	99 1/2	Banque Generale du Luxembourg	8.10
* Not yet priced. ‡ Final terms. ** Placement. † Floating rate note. ‡ Minimum. § Convertible †† Registered with U.S. Securities and Exchange Commission. § Purchase fund. Note: Yields are calculated on AIBD basis.							



## OFFSHORE AND OVERSEAS FUNDS

## INSURANCE AND PROPERTY BONDS

## NOTES

Prices do not include \$5 premium, except where indicated; and are in pence unless otherwise indicated. View % shown in column 1 is for all buying percentages. a Offered prices include all expenses. b To day's prices. c Yield based on cash price. d To day's opening price. e Distribution free of U.K. taxes. f Periodic premium insurance plan. g Single premium insurance. h Offered price includes all expenses except agent's commission. i Offered price includes all expenses if bought through managers. j Previous day's price. k Net of tax on realized capital gains under the U.K. 1965 Finance Act. l Guaranteed. m Yield before tax. n After tax. o Suspended.

**INSURANCE BASE RATES**  
 †Property Growth.....  
 †Vanbrugh Guaranteed.....  
 †Address shown under Insurance and Property Bond Tab



# FINANCIAL TIMES SURVEY

Monday October 23 1978

## Offshore Expertise

The testing conditions of the North Sea are a major proving ground for the development of offshore skills and technology. Although foreign companies continue to dominate the heavy end of the industry, British contractors have made considerable headway in other sectors — so building up a useful bank of expertise.

### North Sea's growing stature

Kevin Done, Energy Correspondent

PRODUCTION from the North Sea Continental shelf has begun to pour out in significant quantities this year for the first time since exploration drilling began more than 10 years ago. Production is running at a rate of about 1.5m b/d with more than 1.1m b/d from the UK and 400,000 b/d from Norway, 10,000 to 20,000 b/d from the North Sea.

North Sea is significant for many other reasons. Petroleum is now being won from one of the most difficult and demanding regions that has yet been explored by the oil industry. For the moment the North Sea has been placed in the forefront of the development of new offshore technology and companies operating in this region are acquiring a degree of expertise which could serve as a major springboard into other offshore markets as attention switches to new exploration areas around the world.

It has been estimated that more than \$4bn is now being invested throughout the world on offshore exploration and production. But of this total the annual expenditure in the North Sea alone is currently claiming over \$2bn. As Dr. Dickson Mabon, Minister of State for Energy, pointed out recently: "We have had to develop new technologies from scratch — technologies quite unheard of in the peaceful shallow waters of the Gulf of Mexico from where many of the North Sea pioneers came. We have built the largest and heaviest man-made structures in the world; towed them out to sea; and placed them on the bottom with the precision of an Apollo moon-shot."

In less than 10 years since the first significant oil discovery 11 oilfields have been brought into production in the British sector. The output of North Sea crude, which began in 1975, had built up to nearly 38m tonnes last year and this year it will exceed 50m tonnes, putting the UK 15th in the league table of world oil producers and well on the road to self-sufficiency in oil.

More than 100,000 people in the UK are employed in oil-related work and British companies have gradually increased their share of the offshore market. But the development of a British offshore supplies industry has not been without its problems, and certainly when the first wave of exploration began British industry was virtually left at the post by the U.S. and in some instances Norwegian and Dutch suppliers.

By last year, however, the UK offshore supplies industry had pushed up its share of goods and services supplied to the British sector to 62 per cent compared with only 40 per cent in 1974. The total value of orders placed in 1977 was £1.3bn of which the UK industry accounted for £806m, its share of the total market rising by 5 per cent compared with 1976. Companies have been particularly successful in heavy engineering, the manufacture of plant and equipment and the fabrication of production platforms.

But there are some areas of the industry where British companies have not made a significant impact, such as in heavy offshore installation which is still dominated by U.S., Italian and Dutch companies. Given the very great investment that is necessary to start operating heavy-lift barges or pipe-laying vessels it is unlikely that the UK will ever make any major impact in these sectors.

The only chance for future involvement would appear to lie in joint ventures with overseas companies. However, if any major changes in the technology for coping with these operations are introduced, UK companies may then have the opportunity of making their presence felt at an early stage. Another weak area for UK industry is exploration and appraisal drilling. There are only four semi-submersible drilling rigs that can truly be said to be in UK ownership and last year British contractors took only 26 per cent of the market.

## Press Group Experience worldwide offshore demand

### Gulf of Mexico

The Press Group has carried out engineering costing, feasibility studies and design work for a number of installations in the Gulf of Mexico and operates a substantial office in the American oil capital of Houston, Texas.

### Norway

Press Group companies have carried out feasibility studies, engineering design, management, electrical and instrumentation hook-up, engineering inspection and non-destructive testing for numerous offshore oil fields in the Norwegian sector of the North Sea, either from the Group's Norwegian or United Kingdom bases. Platforms include Beryl 'A', Ekofisk, Eldfisk, Tor, Statfjord 'A' and Cod.

### Brazil

Design and support technology is being supplied by the Group in the development of the Namorado oil field.

### Australasia

The Press Group is carrying out design and feasibility studies for the Australian North West Shelf gas field. The Group also performed quality control inspection above and below water on the Maui gas field platform, offshore New Zealand.

### Africa

Apart from building an oil refinery on the West Coast and carrying out major engineering inspection and non-destructive testing onshore in Nigeria, the Group is also involved in the offshore African exploration effort, the latest task being conversion of a drilling rig to a production platform.

### Middle East

Press Group companies have been involved with almost every major oil company operating in Saudi Arabia, the United Arab Emirates, Bahrain, North Africa, Iran and Iraq, with permanent facilities in a number of countries.

### United Kingdom

Press Group companies have provided services for almost every oil field in the British sector of the North Sea, ranging from initial design through to commissioning and post-construction work. Numerous onshore terminals and facilities for reception and treatment of North Sea oil and gas have been constructed by Press. The Group has invested in servicing and construction facilities onshore which are virtually unrivalled in meeting the requirements of offshore operating companies. The United Kingdom is also the base for a number of Press Group manufacturing companies providing specialist equipment for the oil and gas industries from Russia to Mexico.

Press Group companies—as listed below—have the necessary expertise to meet the requirements of the world offshore industry.

<b>WORLEY INTERNATIONAL ENGINEERING GROUP LIMITED</b> Consulting, design, engineering, procurement and supervision services in production and processing for the oil and gas industries.	<b>P&amp;W OFFSHORE SERVICES LIMITED</b> A single source management, hook-up, commissioning and maintenance capability.
<b>METAL AND PIPELINE ENDURANCE LIMITED (MAPEL)</b> Specialists in non-destructive testing, radiography, heat treatment and cathodic protection and manufacturers of testing equipment.	<b>JAMES SCOTT ENGINEERING GROUP LIMITED</b> Electrical and instrumentation contractors offshore and onshore.
<b>WILLIAM PRESS PRODUCTION SYSTEMS LIMITED</b> Design, fabrication assembly and testing of offshore plant including modules for process systems offshore and onshore.	<b>GENERAL DESCALING COMPANY LIMITED</b> Designers and manufacturers of pipeline equipment including pigging systems for use offshore.
<b>PRESS-IMODCO OFFSHORE TERMINALS LIMITED</b> Design, fabrication and installation of offshore marine terminals including supply boat bow mooring systems.	<b>DENCO HOLDINGS LIMITED</b> Manufacturers and installers of centralised lubrication systems, air dryers and air conditioning equipment.
	<b>WILLIAM PRESS &amp; SON LIMITED/WILLIAM PRESS (INTERNATIONAL) LIMITED</b> Engineering contractors in the UK and overseas. Design, construction, procurement and project management services for the oil, gas and petrochemical industries worldwide.

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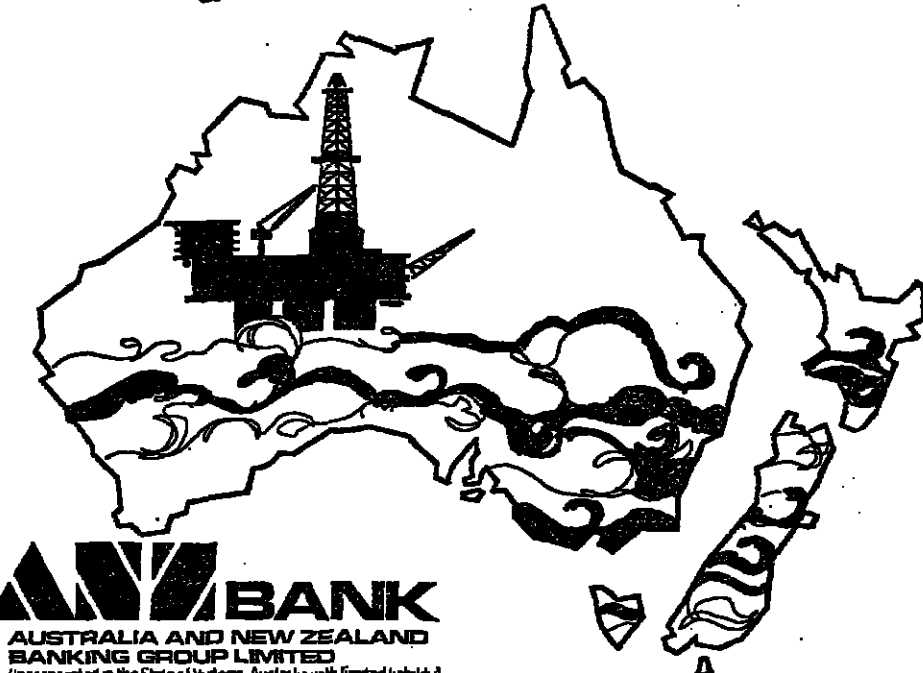
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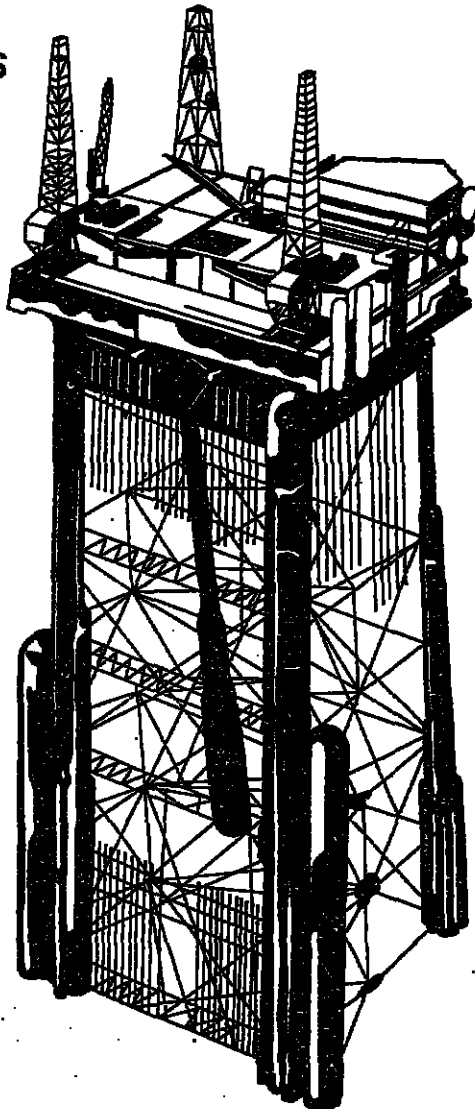
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THE INTERNATIONAL offshore industry is growing rapidly and already offshore exploration for oil and gas is being carried on in as many as 80 countries. About 30 countries are producing subsea oil and gas, and this rapidly growing development effort is creating an important market for oil industry suppliers not only offshore, but also onshore with the location of all the services and terminals necessary to sustain such a high level of activity.

With the experience gained in the North Sea, the offshore industry in Western Europe has a growing opportunity to take a significant share of this international offshore business with the marketing of sophisticated equipment, services, technology and management skills. No overseas markets will be easy to break into and West European companies face important restrictions on the way they are able to operate, especially in markets which are dominated by national oil companies. But such countries do appear to be increasingly anxious to diversify their sources of supply, with the result that the developing oil producers in Central and South America, for instance, are willing to look more and more to European suppliers for assistance to develop their growing discoveries of oil and gas.

## Investment

For the moment the North Sea, with annual expenditure running at as much as £2bn, is dominating the offshore oil industry and alone is accounting for perhaps half of offshore investment. But as Dr. Jack Birks, a managing director of British Petroleum, told a recent European Offshore Industry Conference, as many as 10 North Seas must be found in other regions by the end of the century if world oil reserves are to reach expected levels by the year 2000. To achieve such a figure will demand an enormous physical effort as well as the investment of hundreds of millions of pounds. According to Dr. Birks as much as \$440bn will be spent on offshore exploration and development by 1990 in the non-Communist world alone. Of this total \$340bn would be invested in development and \$100bn on exploration. BP's own plans for exploration expenditure this year give an interesting indication of where the markets are developing.

It is spending about £150m in 1978 on exploration of which the largest single amount of over £30m will go on exploration on the UK Continental shelf. But it is spending at least £10m this year in several other exploration areas, such as offshore Norway, Canada, Egypt and Brazil. Important prospects are also being explored in such areas as Alaska, Australia, Ireland, West Germany, Nigeria and France and some exploration presence is maintained in at least 12 other areas of the world.

But in the past few years three areas of the world in particular have captured the imagination of the oil industry. This year has certainly been the year of China, the year when this vast country decided it should begin to look to Western countries for assistance in the development of its industry and in particular of its huge energy resources. Last year was probably the year of Brazil and 1976 belonging to Russia.

China is considering the sale of crude oil as a means of paying for the purchase of offshore oil equipment and it has entered discussions with four U.S. oil companies, Phillips Petroleum, Exxon, Union and Pennzoil. According to the National

Participation in the Chinese offshore market could offer big rewards, but it will clearly demand a major long-term commitment by any aspiring offshore suppliers. The same must be said of the potentially huge Comecon market and particularly of Russia. No breakthrough is likely to be achieved without months and perhaps years of painstaking negotiation.

But as in China the business is available because the Eastern bloc will require a wide variety of proven Western technology to support the mounting pace of offshore exploration for oil and gas. According to a report published last month by Research Associates, the Comecon countries' offshore development programme could produce a market worth \$24bn by the early 1980s.

The study says that "the Soviet Union remains the largest single oil-producing country in the world. Its requirements for offshore equipment may be larger than the total requirement for the development of the North Sea." The principal area of interest in the Soviet Union is the Caspian Sea shelf, where drilling has been carried out for a number of years. The water is relatively shallow, but the early discoveries of oil and gas are now being rapidly depleted and existing Russian technology cannot cope with surveying and extracting hydrocarbons from deeper fields.

Research Associates say that the technology required by the Comecon countries will include pipeline and associated equipment, drilling tackle and drilling, subsea engineering equipment and extraction equipment. Requirements will build up from this year to the mid-1980s and the market should remain a considerable long-term interest for Western exporters.

For a number of years, for instance, British Petroleum has been discussing with the Russian authorities the possibility of oil exploration in the Caspian and Barents Seas, joint venture oil refining projects and involvement in an oil platform fabrication yard in conjunction with Brown and Root and Wimpey on the shores of the Caspian Sea.

Fast progress could be seen, however, in markets in other areas of the world where the obstacles of negotiation do not loom quite so large. Major opportunities have opened up in Brazil and to a lesser extent in Argentina and Venezuela. Western Australia is keen to attract companies with hard experience won in the North Sea. As in South America the best way forward could lie in the formation of joint ventures. There is also increasing activity

## OFFSHORE EXPERTISE II

# Expanding market

offshore India, Malaysia, in the Gulf of Mexico and off the East coast of the U.S., now about 180 km off Rio de Janeiro. Esso in water depths of about 145 metres. The well is located that Texaco has made the first significant find in this region.

Petrobras has completed the second round of international bidding for exploration areas under risk contracts, which covered 15 of the 25 blocks on offer. The first two rounds have allocated blocks covering a total of 58,000 sq. km and call for a minimum investment of \$212m. A third round is being prepared with 42 areas on offer, 21 onshore and 21 offshore.

Several British companies with a firm base in the North Sea are already active in many offshore areas of the world, but there is still much to be done if the UK offshore supplies industry is to realise its obvious potential. The Offshore Supplies Office is active in trying to identify market opportunities overseas and to build up links between British embassies and the domestic industry. And in this respect, the British National Oil Corporation might find itself playing an increasing role of middleman between foreign state oil companies and British contractors. There is a growing tendency for foreign governments to want to deal on a government to government basis.

Some of the process design contracts for this field went to the William Press group, and orders are still to be placed for the Enchova Field, the largest offshore discovery in the basin to date. Meanwhile some risk taking in the Santos Basin have been let and success in this area could lead to a rapid increase in demand for offshore equipment. One of the latest wildcat wells to be drilled in the area is being carried out by

Research Associates say that the technology required by the Comecon countries will include pipeline and associated equipment, drilling tackle and drilling, subsea engineering equipment and extraction equipment. Requirements will build up from this year to the mid-1980s and the market should remain a considerable long-term interest for Western exporters.

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offshore India, Malaysia, in the Gulf of Mexico and off the East coast of the U.S.,



## OFFSHORE EXPERTISE III

## Benefits of new production units

SEVERAL NORTH Sea operating groups are considering new production techniques for future field development programmes, which could break away from the concept of large fixed platforms.

For several years, oil companies have been studying the possibility of installing lighter, less expensive production units, such as floating platforms and subsea well-heads, and signs are now appearing that such relatively untried technology could soon be put to practical use in the harsh environment of the North Sea.

The rapid rise in development costs associated with conventional systems is the main reason why operators will inevitably change to more modern techniques over the next few years.

But new systems offer other advantages as well. The next generation of North Sea fields will be much smaller than the big discoveries such as Forties and Brent.

As costs increase it will become increasingly important for companies to bring in-stream at least some oil flow as early as possible. Quite modest fields can now cost over \$50m to develop.

Using only a fixed production platform the oil companies may have to invest virtually all this before receiving a penny in revenue. So they are looking for ways of obtaining early production, at least from a field, many months in the main production North Sea.

New techniques are also being developed to allow the water areas of oilfields to be

tapped. Often these more isolated accumulations of oil are too small to justify the installation of an individual platform. But it is being appreciated that they could be exploited, through the use of underwater well-heads, located as much as a couple of miles away from the production platform, but connected to it by small subsea pipelines.

The ultimate goal is to develop cost-effective production systems for all water depths. Mr. Elard Haden, the head of Continental Oil's production systems group said recently: "There has been a tremendous increase in the cost of platforms. The deeper the water, the more hostile the environment, the more expensive they become."

"We need to find some way to break that trend so that we will be able to work in deep water, at reasonable cost."

Conoco points out that when the water depth is doubled, the size of the platform's base is tripled, so that a structure comes to resemble an iceberg, most of whose bulk is hidden beneath the surface.

As a result free-standing platforms become very large in deep water. The most dramatic illustration of the way platform building costs can mount came last month when Mobil Exploration Norway announced an increase of more than 40 per cent in the estimated cost of the "B" platform for the Statfjord Field in the Norwegian sector of the North Sea.

Statfjord B, the second massive concrete gravity platform to be built for the field, is now expected to cost between

Nkr 9.4bn (£940m) and Nkr 10.5bn. That is for a platform that will be producing only 150,000 b/d.

By contrast, the whole development of British Petroleum's 500,000 barrels a day Forties Field was achieved for little more than \$1.7bn. The field came on stream in 1976.

Now BP itself is contemplating investing as much as \$2bn to develop the very northerly Magnus Field, which will produce only 120,000 b/d.

A few years ago a company could expect to invest £2,000 for every barrel of oil produced a day at peak production.

More recently, the cost had risen to £4,000. But now a deep-water field projected to yield about 100,000 b/d or more, and sanctioned this year, could cost the rather alarming figure of £10,000 b/d of peak production.

Dr. Jack Birks, a managing director of BP, recently illustrated the tremendous rise in the costs of building steel platform jackets.

## Advances

In the Gulf of Mexico costs had worked out at perhaps \$2,000 a tonne, he said, and in Central Africa it was nearer \$3,500 a tonne, but in the North Sea it was now costing \$8,500 a tonne.

Against such a background it is not surprising that the industry is looking at new production systems. But although advances in subsea technology—stimulated particularly by the challenge of the North Sea—have been very rapid in recent years, the industry's ability to produce oil and gas in deep

water is still in its infancy.

Exploration wells can now be drilled from semi-submersible drilling rigs or drill-ships in more than 1,000 metres of water—beyond the Continental shelf.

But depths for production—against exploration—drilling is now down to about 200 metres, the depths at which the Brent and Statfjord Fields, north-east of the Shetland Islands, are being developed.

The depth limit for conventional fixed platforms has not yet been reached, however, particularly in areas where the weather is less extreme than in the North Sea.

In the U.S., Shell Oil is building a three-section steel platform weighing 50,000 tonnes for use in the Gulf of Mexico in more than 300 metres of water. The platform will rise about 370 metres off the ocean floor, making it perhaps the world's tallest offshore oil platform.

Although fixed platforms are continually being designed for deeper water, there is no doubt that floating structures can operate at a much greater depth than fixed platforms.

Floating production systems could well be needed to process and handle the oil from wells completed on the seabed. But floating systems can also be used in the North Sea in relatively shallow water as Hamilton Brothers showed on the small Argyll Field, the first field to begin production in the UK sector of the North Sea in 1975.

A conventional steel platform on this field would probably have made the recovery of oil an uneconomic prospect. The Hamilton group used a converted semi-submersible drilling rig as the alternative to a fixed platform.

Now BP is developing the small Buchan Field with a similar system. This calls for a semi-submersible production platform and an offshore loading system. The development of this field, which will have a maximum production rate of 50,000 b/d, will cost about £130m.

It will need seven wells drilled and the re-entry of an appraisal well. BP is using the semi-submersible drilling rig Drilmaster for the job, which is being converted at a total cost of some £25m.

But a far more radical breakthrough to new technology could be achieved on Conoco's Hutton Field, which the U.S. company is developing in partnership with Gulf and the British National Oil Corporation.

It has been working on a design for a full-scale tension leg platform that would displace 45,000 tonnes—more than the largest American battleship at the start of World War II. The floating structure would be pulled down below its normal buoyancy level by strings of steel pipe attached to massive anchors on the sea bottom.

Tensioned like this, Conoco maintains that the platform would be able to resist motion due to wind, currents and waves which would give it the stability of an island in the middle of the sea.

"It is difficult to economically justify big platforms for smaller or less productive reservoirs in deep water," says Mr. Haden. "Unlike fixed platforms, the tension leg platform is movable. It could be floated from a depleted field to a new one, greatly extending the useful life of a platform."

A decision on whether the Conoco group finally opts for this system is not expected until next year. The partners are having second thoughts about the production system and are evaluating the use of a more traditional fixed steel platform.

Some members of the partnership are thought to be concerned about the stability of a floating unit and the financial risk of untried technology.

Many operators in the North Sea are probably ready to be second in the field, but are unwilling to take the lead with new techniques.

By contrast to floating platforms the idea, that subsea well-heads—these are placed on the sea bottom rather than on the platform—can offer both earlier production and the opportunity of draining the outer areas of a field, is already catching on fast.

Conoco has nearly completed three subsea wells for its northerly Murchison Field. The wells, which are aimed at increasing the rate of early production when the field comes on stream in the summer of 1980, are being used to test new methods of subsea installation.

They should considerably enhance the early cashflow from the field giving about £140m extra revenue in the first three years. The subsea completion system will add about \$20m to the development costs, which are expected to total some \$850m.

Sue Cameron.

K.D.

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## Pipeline

CONTINUED FROM PREVIOUS PAGE

In practice, the daily working pressure rate is invariably far lower—even on a big pipe it is only about 1,500 lbs per sq in. more than anything else, the rate is related to the pressure and sometimes it is necessary to reduce pressure simply because the terminal

cannot deal with more than a certain number of barrels of oil in a particular day.

Submarine pipelines have been laid in the Middle East and in the coastal waters of Texas and Louisiana, as well as the North Sea. In some cases, lines with a diameter of as much as 48 ins have been successfully installed.

Early pipes were rolled from plate and joined by electric resistance welding, but this was entirely satisfactory. Solid

seamless pipes were then developed but it was extremely difficult to manufacture lines with a diameter of more than 24 ins using this method. The submerged arc welding process had made it possible to produce extremely high quality pipe rolled from plate and this technique has also brought considerable economy in pipe thickness for the same operating pressure.

Spirally welded pipe is the latest development and it enables large-diameter pipes of great length to be produced. The pipe itself is made of steel in which the spiral weld is wound spirally to any

desired diameter. Yet whatever production methods are used—British Petroleum has pointed out—"stringent specifications, high-class welding techniques and strict quality control" are always the prerequisites of an acceptable pipe.

The steel from which underwater pipelines are made is always of a high grade, although it is still liable to corrosion. But there are certain claddings that are virtually non-corrosive and today all submarine pipelines have an anti-corrosive coating of coal tar, bitumen, impregnated glass or polyurethane. Cathodic protection is also normally applied to pipelines by means of an impressed current or sacrificial anodes.

There is little or no internal corrosion in pipelines carrying crude oil, although the same is not true of gas lines. The latter are normally protected by lining the inside of the pipe with, for example, an epoxy resin.

In addition to all this, completed submarine pipes are also coated with reinforced concrete—not so much for protection but simply to keep them secured to the seabed.

Screw anchors or localised weights are sometimes used, as well, to secure larger pipes. Long pipelines—such as those in the North Sea—are put down by lay barges which drive or

winch themselves along the desired route, laying the lines in their wake. Individual coated pipe lengths are welded together on the barge and the completed line is fed to the seabed along a projecting structure known as a stinger.

It is during laying—whether by barge or by bottom tow when the lines are made up on shore, then towed into the water and connected beneath the sea—that accidents are most likely to occur. This is because the pipes have to withstand far greater pressure during laying than they do once they are installed.

Pipes are subjected to currents, put under strain by the angle at which they are laid and they also run the risk of being damaged by ships' anchors. These are all factors which have to be borne in mind at the construction stage.

But accidents do happen and the estimated indefinite life-span which undersea pipes have is based on the fact that they are regularly inspected and when necessary, repaired. North Sea pipelines, for example, are inspected annually and minor faults, such as popping valves, can be discovered and mended.

The Department of Energy's chief inspector of pipelines stresses that surveys which reveal faults should not give rise to fears of pollution or general alarm among the public. He points out that inspection programmes are designed to locate and rectify faults before faults start posing major hazards.

There are now three known pipeline faults in the North Sea of which the most serious is the split in the Brent Line. The tear in the 36 inch diameter pipeline is about five feet long and nine inches wide and it is in the section of line leading directly from the Cormorant "A" platform to the Sullom Voe terminal in the Shetlands.

Oil was to have started flowing through the Brent pipeline earlier this month but Shell—which controls the line—says the first oil may not now come through for another four or five weeks. The company adds that bad weather may increase the time it takes to repair the split—discovered when the line was being tested.

The Brent pipeline is to be used to distribute oil from the Thistle Field. Meanwhile, Thistle oil is being transported by tankers which collect it from an offshore loading unit. These units are far cheaper to install than pipelines, but during bad weather it is sometimes impossible for ships to use them.

However, they do provide a more economically viable distribution system for smaller fields such as Argyll, Auk and Beryl in the North Sea. Tankers and offshore loading units are also more versatile in that they can deliver oil cargoes to a variety of places, whereas pipelines cannot be redirected—except at enormous cost.

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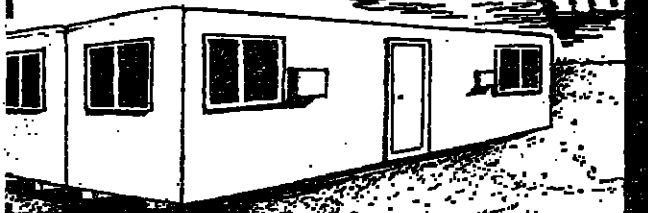
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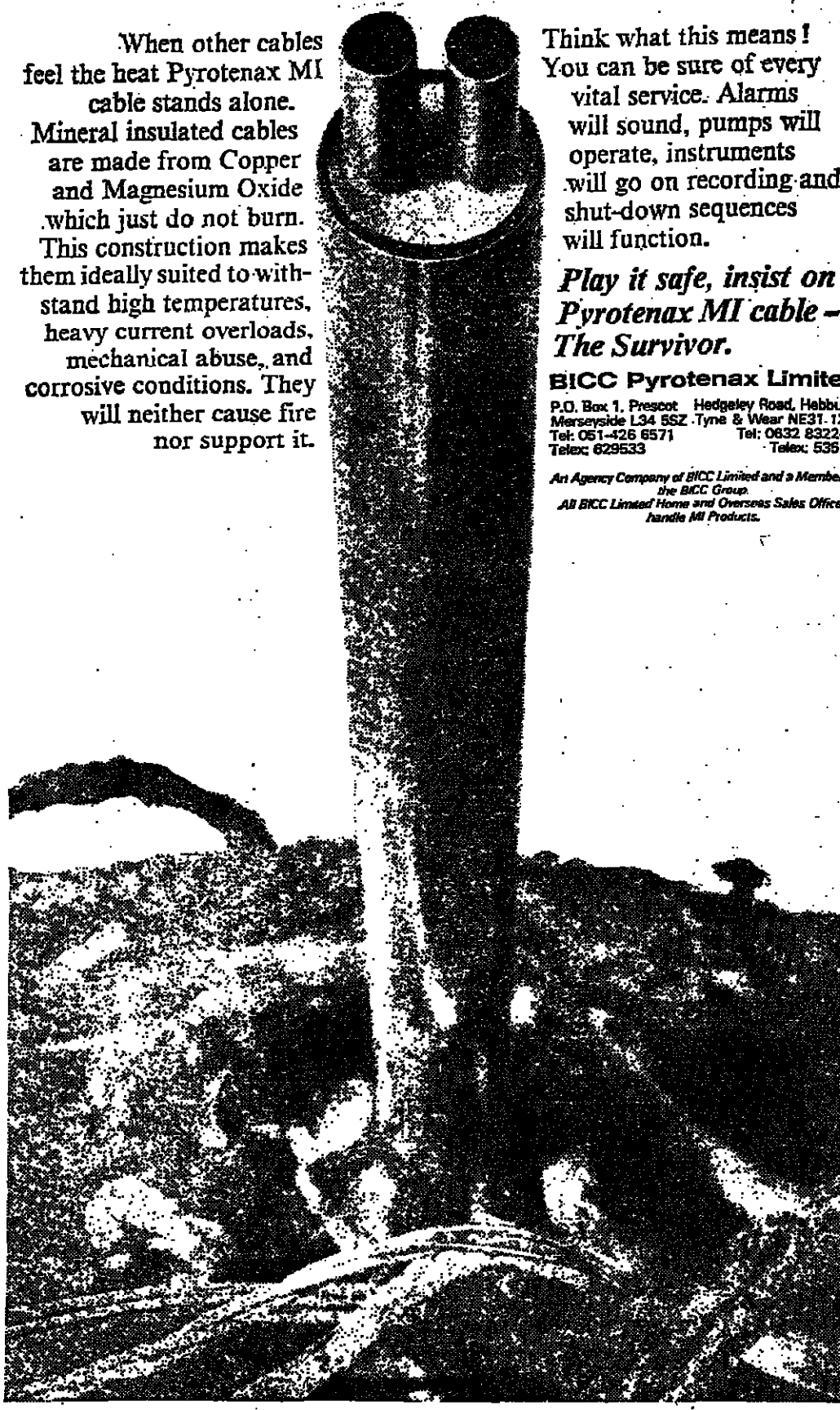
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A WIDELY publicised article in the "New Scientist" two years ago painted an alarming picture of offshore installations in the North Sea suddenly collapsing because of corrosion or metal fatigue. It revived the still fresh memories of the capsizing of the barge Sea Gem in 1965 with the loss of 13 lives.

In the oil industry, however, the prophecy caused less concern than to outsiders. Corrosion of platforms and pipelines is accepted in the industry as a constant threat over which there can be no complacency. However, basic remedies are well-known and industry feels it is on top of the problem.

The first lessons about North Sea conditions were learnt in the Southern sector's first rigs, designed by consultants in the mid-1960s who underestimated the ferocity of the conditions. BP, for example, had to reinforce some of its early platforms *in situ*. However, even on some of the early structures, the safety margin was sufficient. Tests are expected to confirm that a gas rig which BP recently pulled out of the West Sole field in the Southern North Sea has stood up remarkably well to more than a decade in the water.

### Costly

However, ensuring the stability of structures has been a costly business. Because of the unfamiliarity of North Sea conditions, exceptionally generous safety margins were allowed in steel thickness and in the weight of the cathodic protection systems — mainly sacrificial anodes of non-ferrous metals — designed to take the brunt of sea water corrosion. These systems had correspondingly expensive maintenance costs.

The wide safety margins also reflected the conscious desire of the oil industry at that time to get the oil out of the sea bed and to solve problems as they were encountered. However, the industry is now emerging from this stage and is steadily refining its knowledge to boost safety, and to reduce the costly design margins. Above all, it is looking for new ways of monitoring the protective

systems which have been installed.

The hazards of corrosion are, therefore, no longer as evocative an argument in favour of concrete as opposed to steel platforms as the concrete manufacturers have claimed them to be. Concerns about corrosion in the legs of a steel platform are also somewhat more academic because of the unlikelihood that any more free-standing rigs will be commissioned, like those in the northern fields of the North Sea.

With the oil search going into much deeper waters, like those West of Ireland, designers are working on the idea of floating rigs, possibly tethered to the sea bed with very strong polyester cables. The risk of their sinking as a result of corrosion seems even more remote — and certainly less spectacular — than the collapse of a standing rig.

This is not to say that corrosion does not pose immediate hazards on present installations. The most vulnerable parts of platforms are in their splash zones, immediately above the water line, and the riser pipes, from the sea bed to the platform.

Millions of pounds are spent annually on sand blasting and painting platforms above the water line and although the paintwork is supposed to last from five to 10 years without rusting, it rarely does. Shell-Expro has done complete repainting on some fairly new structures in the past 18 months. The rust which made this necessary was, however, as much due to damage as to faulty paintwork.

Repainting is often necessary because a slight film of rust developed during on-shore construction. Efforts to prevent this happening include erecting huge hot-house type screens around the structure, into which hot air is blown. But even this has not been fool-proof.

The danger of corrosion on riser pipes was brought home by the gas explosion on Phillips Ekofisk Alpha three years ago. It led to a crusade by regulatory bodies to make risers resistant to such failures. An

other case — fortunately discovered during inspection — was on BP's Forties Field three years ago. The Government-backed National Corrosion Service says it is still waiting to learn precise details of the incident.

One expensive lesson learnt from the riser failures is to stop coating them with epoxy resin and, instead, to encase the risers in a metal cladding of monel. This is an extremely anti-corrosive alloy used for sea-water systems in ships. At Shell's Fulmar platform, being built by Highland Fabricators at its Nigg yard, sheets of monel are being welded on to the risers from about 20 feet below the water line to 15 feet above. The risers themselves are made of pipeline grade steel.

At the research level, too, work on risers has been intensified. Projects include the £300,000 joint programme of the National Maritime Institute and the National Physical Laboratory. Other work on risers is under way at Queen Mary College (London University), and at Oxford University.

### Switch

More significant than such individual projects, however, is the overall switch in emphasis from mere improvements of anti-corrosion mechanisms to developing better means of monitoring and diagnosing them. Until now, the emphasis has been on finding where something is going wrong, even though it may turn out to be impossible or too expensive to repair once it is traced.

But today, in the words of Mr. N. Rendell, of Shell-UK, the offshore oil industry is "crying out" for a package of instrumentation which can be installed on a structure and indicate when something goes wrong below the water line.

Although there are already some on-board systems which indicate the state of a platform's cathodic protection, they are still only of limited use, and inspection by divers is still necessary.

What is envisaged are sensors to locate and measure the rate of corrosion at any

sensitive point. These would be integrated into a monitoring system aboard the platform, assessing significant data and screening out what is extraneous. Studies by the Engineering Research Station have led to proposals for "finger printing" the inside of a pipeline and this may also point the way to protecting structures as well.

Meanwhile, the amount of research into underwater engineering problems, including corrosion control, is shown in a directory, published last year, by the Construction Industry Research and Information Association. It lists in Britain alone some 260 R and D projects concerned with offshore structures — double the number listed by the same organisation two years previously.

But while academic work goes on in laboratories, maintenance continues in the North

Sea. Oil companies are today increasingly anxious for a total service from under water inspection — contractors, rather than making separate arrangements with different specialists. "We want a total package of inspection and maintenance and don't want to have to tell contractors how to do it," Shell's Mr. N. Rendell said.

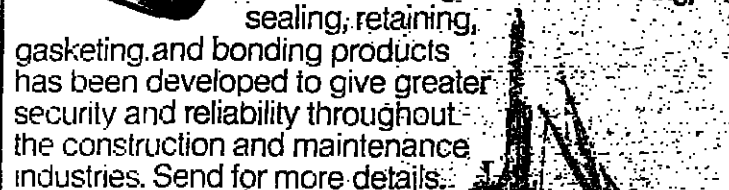
Such services are already becoming available, judging by the growth of new consortia on both sides of the North Sea, says Dr. Peter Rothwell, the National Corrosion Service's director. They are stimulated by the growing subsea inspection and maintenance market which, according to figures quoted by Dr. Rothwell, could be worth £55m-£125m by 1980, with another £35m-£60m for platform maintenance.

Maurice Samuelson

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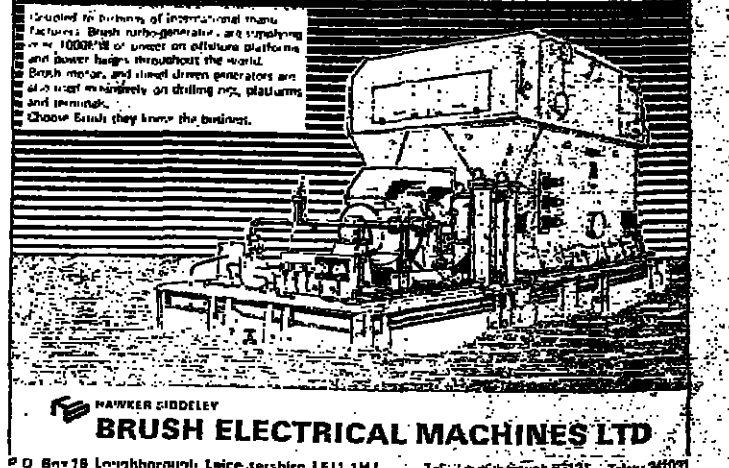


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## Transport growth

ALTHOUGH THERE remain many uncertainties in plotting the future of world offshore oil development, for those involved in what can be loosely termed the industry's transport sector there is one certain prospect: that of growth.

As the search for oil off Northern Europe, for example, moves into deeper water and into entirely new sectors, such as the Irish Sea and the Western Approaches, the business of moving men, materials and the oil and gas products themselves is bound to become even bigger business.

But beyond that happy certainty, there are many doubts. What will emerge as the preferred platform design in water beyond 1,000 ft depth? Will pipelines be feasible in "marginal" fields or will ship-loading systems predominate? Will political pressures tie the support industries with protectionist measures? What is the optimum size and power of the next generation of supply boats? What kind of vessel will lay pipes in the deeper water?

The list of these questions is almost inexhaustible and of course most of them are not pure transport questions at all. Indeed, some questions, like that of platform design, are transport matters only in so far as the needs are met, at least in part, by those whose primary business is the building of ships.

A more straightforward transport sector is that of helicopters. Here again there is the certainty of growth beyond the 25,000 weekly movements of men already estimated to take place throughout the world offshore industry. The British Helicopter Board estimates that over one-fifth of the 12,000 civil helicopters expected to be in service by 1985 will be serving the offshore oil and gas industries. By the same date, that 25,000 figure could well have doubled.

Helicopter technology, the advanced primarily under the pressure of military demands to produce a competitive aircraft capable of competing with a fixed wing aeroplane up to 250 miles, is being developed

further in response specifically to the offshore industry's requirements.

In passenger transportation, it is simply a question of continuing the trend which has halved seat-per-mile costs in the last two decades, by building faster and more economical craft, although not necessarily larger helicopters. Sikorsky's second generation S-76 helicopter offers a 12-passenger capacity with a range of up to 691 miles and a cruise speed of 167 m.p.h.

Slightly less predictable is the future of the heavy lift helicopter in offshore work. Boeing-Vertol's civilian version of the CH-47 Chinook can carry a 16-ton load over short distances and has a normal capability of a 46,000 lb payload, or 44 passengers.

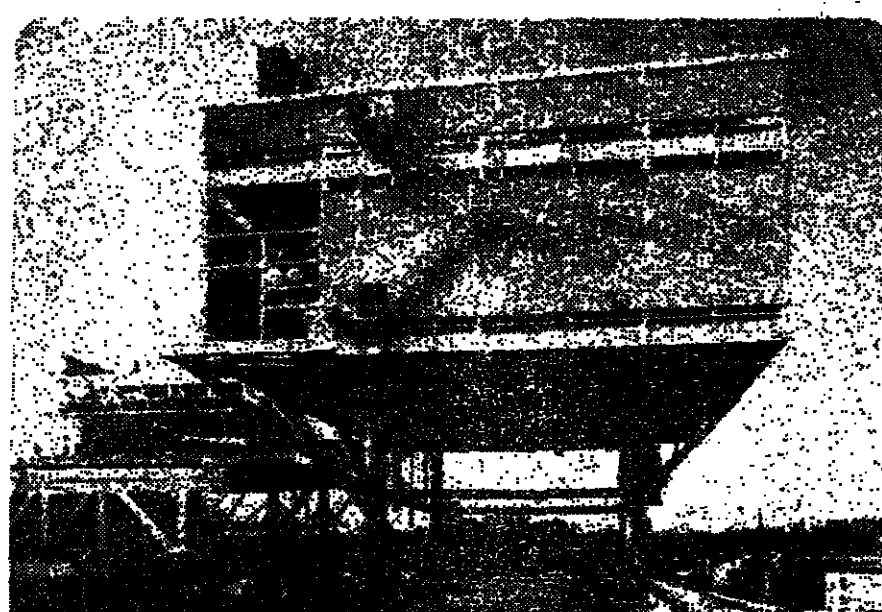
### Weather

There clearly is a growing role here for helicopters, but the movement to more distant oilfields, economics, weather and perhaps a growing tendency to prefer integrated rather than modular deck construction techniques will obviously limit the helicopter's role. At the same time as the helicopter is flexing its heavy-lift muscles, marine technology has also produced important advances in crane barge design with the arrival in the North Sea of Heerema Group's twin 5,000-ton semi-submersible crane vessels. Between these extremes of lift capability, there are many other alternatives.

From the helicopter and light aeroplane operator's point of view, the challenge is of increased specialisation as an extra to the straightforward growth in passenger volumes, which are already making heavy demands on the North Sea's air terminals, such as Aberdeen and Sumburgh. One consolation is that the early days, which saw operators crowding into the North Sea sector in the hope of fast profits are passed and the growing sophistication of the operator's task will make capable of competing with a fixed wing aeroplane up to 250 miles, is being developed

an effect on helicopter demand is the extent to which accommodation platform or vessel design and availability improves. Offshore broker Edgar Forrester is a long-established proponent of the view that more must and

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# Finding solutions to gas waste

TWO REPORTS that are now being studied by the Department of Energy confirm that new methods for the offshore use of gas, such as offshore liquefaction or offshore power generation, could be feasible on both economic and technical grounds. The studies open the way to finding a solution to a problem that has vexed the Department of Energy for many months, namely the wasteful flaring of gas.

In the past two years the Government has taken a much tougher stance on gas flaring. Last year as oil production from the North Sea began to build up rapidly it was estimated that the equivalent of 8 per cent of British Gas's annual sales—worth in excess of £180m—was being flared wastefully into the atmosphere. The problem arises with oilfields where gas is discovered along with the oil. This associated gas must be produced with the oil, but often it does not exist in sufficient quantities to warrant the building of a separate pipeline to bring it ashore.

Sometimes during the early life of the field this has necessitated large-scale flaring—as appears to a great extent with British Petroleum's Forties field—or the injection of the gas back into the reservoir.

In the frantic early rush to develop the first North Sea oil and gas recovery systems did not merit a lot of attention. But with the country well on the way to reaching self-sufficiency in crude oil production by 1980, concern has increased that a valuable energy asset might be simply wasted.

## Damage

Re-injection can only be a temporary solution and in the long-run it could cause permanent damage to the performance of an oil reservoir and actually back the amount of oil that will ultimately be recovered. So the Government has been pursuing two additional lines of thought. The most ambitious of these, the construction of a comprehensive £5bn gas gathering pipeline network to pick up gas from various scattered pockets of gas, was recommended in a report prepared by Gas Gathering Pipelines Limited, a company that included both state and private interests.

But the idea has not been endorsed by the Government. It could be picked up again in a later stage if additional quantities of gas become available from the Norwegian sector of the North Sea, which would considerably enhance the economics of such a system. In any case a number of proposals for mini-gathering systems recommended in the report, based on the exist-

ing Brent and Frigg gas trunk lines are being actively pursued. And at several fields millions of pounds worth of gas re-injection equipment are being installed as a temporary way of saving the gas.

One of the first fields to become a victim of the tougher Government rules on gas flaring was the Shell/Esso Brent field, the largest oil discovery yet made in the UK sector of the North Sea. Shell, the operator of the field, was ordered by the Department of Energy in June last year to shut down production from Brent until it could avoid wasting gas that was produced along with the oil. The "B" platform, which was the only one on stream at the time, remained shut down for nearly 15 months and it only came back into production last month. When the order was made the department believed that natural gas worth more than £50m could be saved. About 1.5m tonnes of oil production was delayed by the shut down, but gas to the equivalent of perhaps 1m tonnes was saved. Shell said earlier this year that the delay in bringing the oil ashore had cost it over £57m in postponed revenue.

## Severe

The gas problems at Brent are particularly severe because the field has such a high ratio of gas to oil. With reserves of about 3 trillion cubic feet of gas the field was big enough to justify the construction of a separate gas pipeline to a shore terminal at St. Fergus. But this will not become operational until 1980, when Shell/Esso will begin supplying British Gas with a minimum of 500m cubic feet a day of natural gas. With the restrictions on flaring Shell has had to halt production until the expensive gas-compression facilities could be added to the four Brent platforms to re-inject the associated gas. This programme of work is well on the way to completion, but it has involved the two companies in spending £15m to £20m per platform on re-injection facilities. The units represent some of the world's most advanced technology in this area. They must take gas being produced from the field at about 2,000 pounds per square inch and re-inject it at as much as 6,000 psi to counter the pressure of the gas cap located 10,000-12,000 feet below the seabed.

But it is not just fields like Brent with such a high ratio of gas to oil that have had to make elaborate plans for gas recovery. What amounts to gas gathering systems have already been initiated, for instance, by Occidental for its Piper and Claymore fields and by Shell/Esso for the Cormorant field.

Occidental is well on the way to completing an £85m gas collection system which will be linked, via a 35-mile spur line, to the trunk gas pipeline running from the Frigg field to St. Fergus in Aberdeenshire. The link from Piper is capable of carrying up to 90m cubic feet of gas per day. It is estimated that over the life of the field Piper will produce 90bn cubic feet of natural gas. The Energy Department insisted on this scheme being implemented when the Occidental group applied for permission to boost oil production from this field.

## Tankers

Earlier this year it was announced that Texaco's Tartan Field would be linked into this mini gathering system for the recovery of gas. It is likely that at a future date Mobil's Beryl Field will also be linked into the Frigg line. Oil from Beryl is loaded offshore into tankers and for the moment the gas is re-injected. Meanwhile Shell and Esso are working on plans for a Cormorant-Brent gas pipeline. This is likely to have the capacity and sub-sea links that will make it possible for gas from the Heather, Ninian and North West Hutton fields to be recovered through this line. The mini gathering network might cost £110m to £130m.

These schemes solve part of the problem, but the Department of Energy disagreed with some of the findings of the Gas Gathering Pipelines Report, which it found unambitious, and there remain many issues to be debated before it becomes clear which fields can be linked "economically" into mini gas gathering systems. But the report does make clear just how much gas might be flared if no actions were taken. Excluding Brent and Frigg about 700m cubic feet a day of natural gas may be produced from northern North Sea fields by 1985. This will rise to more than 950m cubic feet a day by 1990. Flaring is expected to increase to a maximum of 1980 approach 300m cubic feet a day. After this date it should decrease to about 200m cubic feet a day. If the proposals in the GGP report are followed gas flaring would remain at about this level until 1985.

Some associated gas is already made use of beneficially, of course, as a way of powering production platform equipment and indeed in re-injection to keep up reservoir pressures. But if the addition of gas gathering systems does not provide the complete answer for preventing flaring there could be more exotic solutions, such as offshore power generation, offshore gas liquefaction or offshore conversion into chemicals. According to the Department

of Energy a preliminary assessment of many of the chemical conversion possibilities, such as ammonia, carbon black, and ethylene were not practicable because of the problems and costs of operating process plant in the North Sea environment. But there is a real promise in three other options, offshore conversion to methanol, liquefaction and power generation. Methanol is the least attractive of these because it still needs some large process plant offshore.

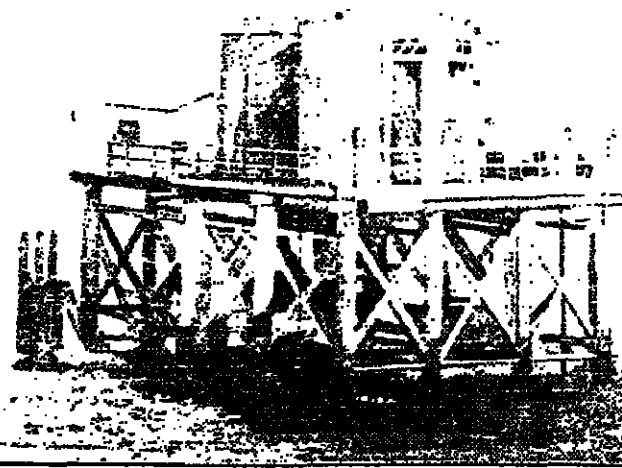
But according to Dr. Dickson Mabon, the Minister of State at the Energy Department, the other two options could represent "useful, if limited, additions to our armoury for achieving the maximum possible utilisation of associated gas." Feasibility studies were commissioned by the Offshore Energy Technology Board and the reports were recently completed.

## Storage

David Brown-Vosper Offshore was commissioned to conduct a feasibility study into the design and application of gas liquefaction and storage terminals as a way of recovering small to medium-sized quantities of excess associated gas. It has concluded that the recovery of gas by liquefaction and its storage on offshore terminals—either semi-submersible or units floating on the surface—is both operationally and technically feasible. Liquefied natural gas could be landed ashore at prices in line with the current LNG market and offer a discounted cash flow rate of return of about 20 to 30 per cent.

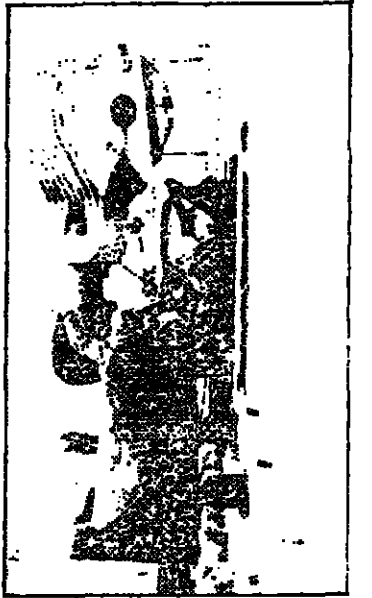
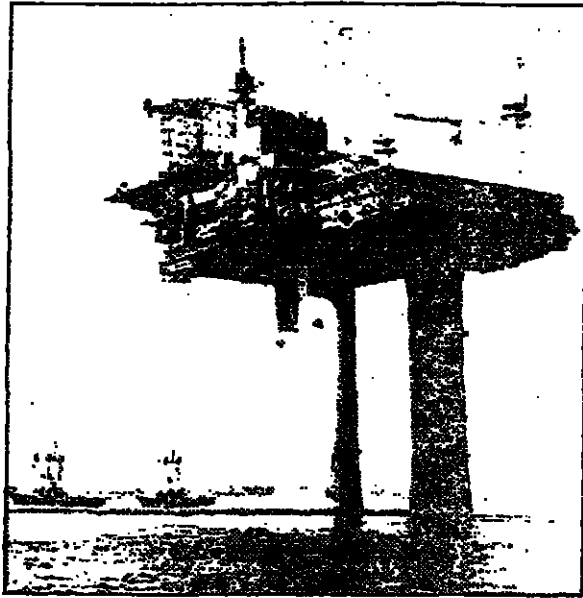
Such floating systems would have a minimum design life of 12 years, and they would have the major advantage over pipeline that they could be moved from field to field in order to spread the investment. But the company is already worried that the idea of offshore LNG schemes will not be followed up quickly enough in the UK and that the design initiative could slip by default to Norway or West Germany. According to Preece Cardew and Rider, the other company commissioned by the OETB, offshore power generation through the use of natural gas is also entirely feasible with current technology. Such a system would involve the installation of offshore generating plant, probably gas turbines, and the laying to shore of high-voltage direct current transmission cables. Power could be produced from some fields, it suggests, at sufficiently low prices to make it attractive enough for the Central Electricity Generating Board to accept.

K.D.



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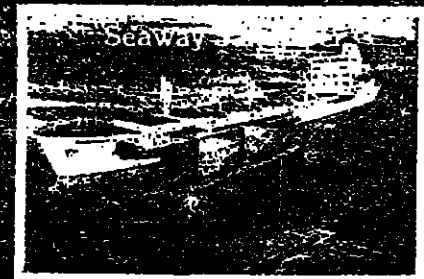
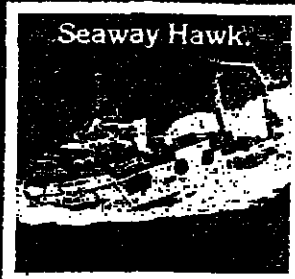
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## Transport

CONTINUED FROM PREVIOUS PAGE

It will be done in this sector and the terminal Operators, the company arm of the Esgar reester group, has predicted three-fold increase in demand for accommodation and storage of ships by 1985. This is an area where the shipbuilders are hoping for business.

British Shipbuilders, now in second year of state-ownership, is one of the groups involved and there is much for the manufacturing Esso, which is about to receive the of the North Sea industry whether the corporation can between them have taken bids

make up for lost time in its offshore effort.

Its biggest success so far this year has been in winning through its Scott Lithgow, Clyde-side, member the £60m contract to build an emergency fire-fighting and maintenance semi-submersible for the British Petroleum and the British National Oil Corporation.

Scott Lithgow is now bidding for a similar vessel for Shell-Exxon, which is about to receive tenders from six operators who the corporation can between them have taken bids

from a wide variety of shipyards. Given the Government's determination that these highly valuable orders should be placed in home yards during the merchant shipbuilding slump, Scott Lithgow's main competitor is from Harland and Wolff, which is not part of British Shipbuilders, and from the Tynce Ship Repair Group, should Shell-Exxon prefer a conversion rather than a new building.

Another area of the offshore market where British Shipbuilders aims to establish itself or improve its penetration is in the next generation of production platforms, starting with the tension leg platform in intermediate water depths and in the floating platform for deeper water work.

## Supply

On the supply boat side, it has recently, in conjunction with leading UK operators, worked out a pair of basic designs for potential construction at Scott Lithgow's Ferguson yard and at Appleton Shipbuilders, Devon. One of these involves a large, 10,000 hp anchor handling design, the other a smaller, less sophisticated boat, designed for service with platforms which themselves possess the manoeuvrability offered by dynamic positioning systems.

British Shipbuilders is continuing to strengthen its design and marketing capabilities in the offshore sector and there can be no doubt that, properly marshalled and provided that good standards of delivery and performance can be met, the

offshore industry can provide a large part of the solution to the corporation's rapidly diminishing orderbook. In addition to offshore structures, there is also of course conventional repair work and the possibility of eventually building gas and oil shuttle tankers for service in the North Sea.

Competition, though, is tough, especially from Scandinavia, Holland, Germany and France, although the effects of foreign competition seems certain to be increasingly blunted by Government pressure on the oil companies to buy British equipment. But even in Britain, British Shipbuilders' repair yard ambitions in the module building sector, for example, face some formidable competition from much smaller, private enterprise companies, such as the expanding Kestrel Marine, which is part of Lyle Offshore.

Increasing protectionism in offshore oil, which is likely to be repeated as Ireland's new-found reserves start to be exploited, will also tend to promote international links between companies inside the protectionist fence and those outside possessing the required expertise.

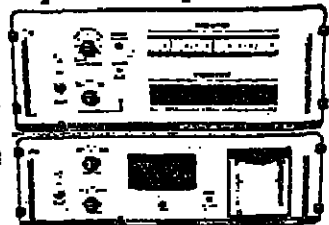
There was something of this in the recent tie-up between two large and successful operators, Heerema of Holland and Stolt-Nielsen of Norway. In Norway, offshore protectionism has been developed to a stage beyond that currently promoted by the British Government.

Ian Hargreaves

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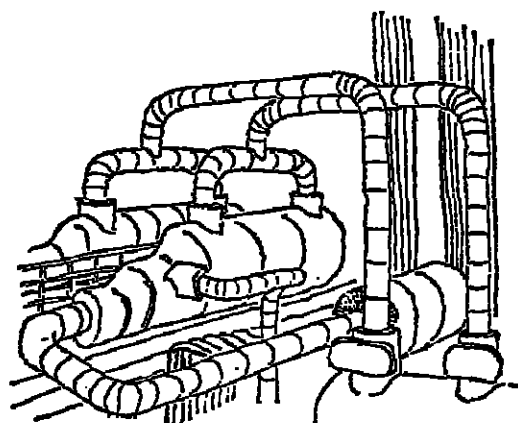
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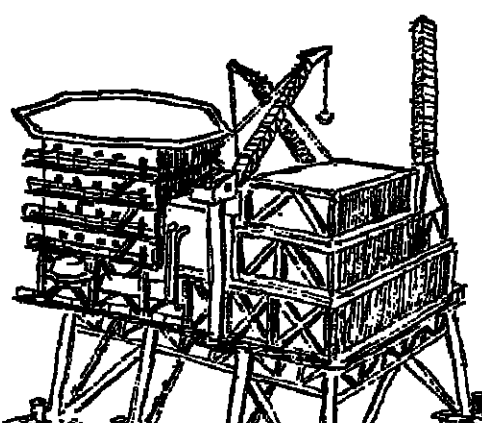
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SANTA ANA, CALIF., U.S.A.

## OFFSHORE EXPERTISE VI

# Major advances in diving technology

OIL COMPANIES operating in the British sector of the North Sea will probably be paying no less than £300m a year for diving inspection, maintenance and repair work by the 1980s.

This sum now represents roughly one quarter of the total operating bill for the British sector of the North Sea last year. £1.3bn was spent on goods and services by the oil companies. Although diving costs are increasing rapidly, the North Sea oil and gas discoveries have, however, stimulated enormous technological advances in the equipment used by divers.

It is estimated that there are now about 1,400 trained divers working in Europe and roughly 1,000 of these are operating in British waters. The job can be dangerous, although so far this year there have been no diving deaths.

At the same time most divers are expected to be versatile people, skilled in non-destructive testing techniques, carpentry, underwater welding, the use of precision cutting tools and photography. Yet this is beginning to change as developing technology brings with it a trend towards greater specialisation.

It takes about eight weeks to train someone in basic diving skills. The demand for trained men is growing—at the beginning of the decade there were only about half the number of divers now operating in the North Sea.

This increased demand for

skilled men has been recognised by the Government whose Training Services Agency has opened a divers' training school of its own at Loch Linnhe in Scotland.

Divers who have finished their basic training then have to learn such techniques as ultrasonic measurement, magnetic particle inspection and wet and dry welding. Ultrasonic and magnetic particle equipment is used for inspecting underwater installations and inspection is an important part of the work of all offshore divers. Ultra-sonics are used to test the thickness of, say, steel struts, while magnetic particles are used to show up cracks or faults in underwater structures.

Welding techniques are much used for repairs. It is possible to wet weld under water, but to achieve the same high quality welds as are expected on the surface, it is necessary to weld in the dry. Divers achieve this by erecting special steel chambers to displace the water while ensuring that the pressure inside and outside the chamber is the same. Welding fumes are extracted either by a controlled leakage or by a hydraulically powered closed circuit filtration system.

The chamber is open to the water at the bottom and the diver who is doing the welding works either wholly or partly inside it. He wears a closed circuit water-heated diving suit and breathing gas for the welding is supplied from the surface or from a diving bell.

The design of diving bells is being continually developed and improved as are the methods used for launching them. Some ships, for example, now have both deck launching mechanisms and moon pools—a means whereby diving bells can be lowered directly from the bottom of the ship.

Efficient surface equipment is vital for all forms of diving because it is neither safe nor economically viable to call off underwater inspection and maintenance simply because of rough weather.

### Conditions

Nearly all the equipment and techniques that have been developed for use in the North Sea can be applied all over the world. One of the reasons for this is that the North Sea provides such a testing environment: it is cold, deep and capable of producing appalling weather conditions.

Machinery that can stand up to conditions such as those found in the North Sea should be more than capable of performing well in calmer and warmer offshore areas. Diving bells are now being built that have some of the characteristics of submersibles. Comex Industries, the French-based offshore equipment company, has produced a manipulation and observation bell that can operate in depths of up to 1,000 metres—3,300 feet.

The bell can move around in a radius of up to 500 metres—1,650 feet—or half the depth at

which it is operating. It is connected to the surface not by the traditional, somewhat bulky "umbilical cord," but by an electro-mechanical cable that is only 1 inch in diameter.

The bell, which is driven by impellers, thrusting it along at the end of its slend cable, can take two men operating at one atmosphere—normal air pressure on the surface. The use of the electro-mechanical cable makes it possible for the bell to transmit direct colour television pictures to the surface. It has two manipulators—mechanical arms—and these can be used for undertaking work on submarine structures or on the seabed itself.

Most working dives are now carried out at a depth of about 500 feet in the North Sea but parts of the Northern North Sea are over 500 metres—1,650 feet—deep. As exploration continues offshore, the need for men and machines that can operate at greater depths will increase.

Submersibles play an essential part in offshore inspection, maintenance and repair work and many are equipped with manipulators that are sufficiently sophisticated to be able to screw and unscrew nuts and bolts.

But there are still severe limitations on the work that can be done by these mechanical arms, and this is one area where further technological development is required.

Submersibles at present are perhaps most used for inspection purposes although diver lockout models are also used for underwater repair. Vickers Oceanic—one of the companies that operates submersibles—reckons a diver lockout model would cost about £16,500 to £17,000 while it puts the price of a two-man conventional spread submersible at about £9,000.

One forthcoming scheme for saving companies operating offshore a considerable amount of money is gas reclamation. This is being developed by Comex and although it is not yet on the market it is expected to be available sometime next year.

During saturation diving, divers breathe oxygen-helium mixture which can contain up to 96 per cent helium. Supplies of helium gas are not over-abundant and the two main sources are Russia and the U.S.

Oxygen-helium is therefore extremely expensive and costs now work out at about £4 per cubic metre. Yet it has to be used for diving because unlike pure oxygen or nitrogen, it does not induce narcosis in those who breathe it at any depth.

Up to now, divers have breathed in oxygen-helium and then exhaled it into the water, where it has been lost. But now Comex is working on a system for reclaiming 70 per cent of the gas mixture, regenerating and recompressing it so that it can be used again. Two divers working at depths of 200 metres for 18 hours will consume about 2,160 cubic metres of oxygen-helium in just one working day, so a gas reclamation system would mean a saving of their company of between £3,000 and £4,000 daily.

One diving company has last year spent £170,000 on breathing gas in a single month. It is developments such as these that are putting European skills and technology in the forefront of international offshore expertise. As British Offshore Supplies Office says, diving must become "one of the future major growth areas" and innovation in the North Sea will ultimately have significant world-wide implications.

Sue Cameron

## New systems of communication

OIL RIGS and gas platforms in the North Sea and elsewhere

are already using some of the most sophisticated communications systems in the world, but further technological developments are now being planned to meet the growing needs of offshore industry.

Intensive oil exploration is being carried out in Alaska, Indonesian, Mexican, West African, European and Chinese waters and it is estimated that there could be as many as 560 offshore rigs throughout the world by 1985.

Today there are 23 oil rigs in the British sector of the North Sea alone and there are more platforms in the southern section of the sea where the 12 gas fields are located. All of them depend on reliable communications systems to meet their production schedules and to ensure the safety of their equipment and their personnel.

Most companies have two basic options when it comes to choosing a communications system for their offshore platforms. They can either use satellites or tropospheric scatter, although there are some limitations on the use of the latter.

The chief of these is that tropospheric scatter systems cannot be used by platforms that are more than 350 miles away from the shore. On the other hand, tropo systems have the big advantage of being far cheaper to construct and install than satellites.

All the oil rigs in the British sector of the North Sea can use tropospheric scatter for their communications—even the most far flung fields such as Forties and Feryl are only about 120 miles away from the nearest landfall. And in recognition of this, the Post Office has embarked on a £5m North Sea communications programme.

Most of the money is going on capital expenditure for two radio stations—one at Mormond Hill near Aberdeen and the other at Scunbury in the Shetlands.

All North Sea communications systems come under the aegis of the Post Office which is responsible for manning transmission stations and for maintaining equipment. But the tropospheric scatter equipment itself is manufactured by companies such as Marconi. The cost of tropo scatter systems varies enormously depending on how many communication channels are required—it is possible to have as many as 132. The tropo system for the Frigg gas field was made by Marconi and it cost roughly £1m—including two transmitters.

The principle on which tropospheric scatter systems work is comparatively simple. Powerful radio waves at microwave frequencies are sent up from giant, dish shaped transmitters and then bounced back to the earth's surface off the troposphere.

The troposphere is one of the layers of the earth's atmosphere. It is about 30,000 feet above the surface—roughly the same height at which airliners fly.

Much of the beam that is sent up—about 95 per cent of it—penetrates the tropospheric layer and is lost in space, but the remaining 3 or 4 per cent is scattered back down to earth. Little though it is, it provides an extremely predictable radio path and as a transmission method it is 99.9 per cent reliable.

Tropospheric scatter can be used for telemetric links, for data transmission and for direct telephone links. Of the three, telemetry is perhaps the most exciting and Marconi predicts that this will be the growth area in offshore communications. Telemetry is a means of transmitting information in digital packages and its importance lies in the fact that it will increase the degree of remote control that can be exercised over offshore gas and oil production.

At present most data transmissions are telexed, although they can also be sent as dial readings, print-outs or visual display unit readings. A survey of oil industry telecommunications needs was carried out last year by the European Space Agency and it was found that most production fields—each with a number of separate platforms—required two circuits for data transmissions plus four for teletype and a further six for voice links.

In a paper published earlier this year, Mr. J. D. Rogers of Marconi Communications Systems, points out that this finding from the agency's survey "falls broadly in line with the planning of the British Post Office for North Sea Oil where as many as five production fields are connected by line-of-sight links and the total channel requirement multiplexed on one 73-channel tropospheric scatter microwave carrier."

Satellites are usually the only economically viable way of providing reliable telecommunications for oil rigs that are more than 200 miles from shore but the cost of constructing and putting up a satellite is considerable. It is estimated that a special satellite would cost at least £30m to launch and service.

At present 17 European countries, including Britain, are taking part in the Eutelsat project. The 17 will share the cost of putting up a European Communication Satellite which will carry telephone calls, television pictures and telecommunications services for those North Sea oil platforms that are beyond the range of the existing Post Office tropospheric scatter systems.

One transponder of the satellite has already been dedicated to the needs of the offshore oil industry.

In the future, communications systems will have to be further developed to cater for the needs of semi-submersible and even totally submerged oil rigs. Today, much of the processing and control equipment of semi-submersible rigs is housed on the seabed and low-scan systems are being used to transmit sketches of worn or damaged parts. But in the coming years it is believed that full video circuits will be needed on the shore-link to ensure efficient surveillance of production operations.

Video circuits are also likely to be demanded by those who work on the rigs—particularly as production platforms are built further away from shore and men have to serve longer shifts.

S.C.

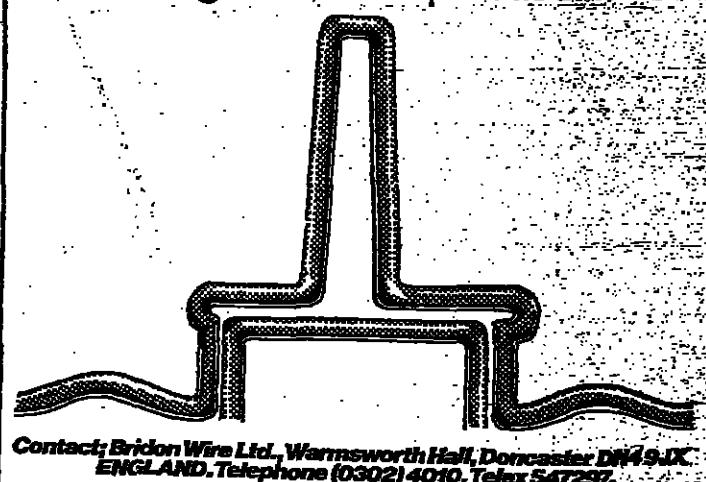
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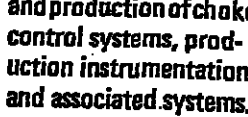
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### REDEMPTION OF BONDS

Shell International Finance N.V. announces that for the redemption period ending on 16th November 1978 it has purchased and cancelled bonds of the above loan for U.S. \$180,000 nominal capital and tendered them to the trustee.

The nominal amount of bonds to be drawn for redemption at par on 16th November 1978 to satisfy the Company's current redemption obligation is accordingly U.S. \$6,820,000 and the nominal amount of this loan remaining standing after 16th November 1978 will be U.S. \$8,000,000.

### DRAWING OF BONDS

Notice is accordingly hereby given that a drawing of bonds of the above loan took place on 6th October 1978 at 10.00 a.m. at the offices of Mr. Keith Francis Croft Baker of the firm of John Venn & Sons, Notary Public, when 6,820 bonds for a total of U.S. \$6,820,000 nominal capital were drawn for redemption at par on 16th November 1978, from which date all interest thereon will cease.

The following are the numbers of the bonds drawn:-

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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Monday October 23 1978

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## Walker backs Heath stand on pay curbs

BY RICHARD EVANS, LOBBY EDITOR

THE ARGUMENT within the Conservative Party over pay policy intensified yesterday when Mr. Peter Walker, former Tory Cabinet Minister, claimed that the leadership's call for a return to responsible free collective bargaining was simply not an option at present.

His speech at Droitwich showed that Mr. Walker, still a figure of some influence in the party, supports his former leader Mr. Edward Heath in his need to retain an incomes policy to help combat inflation.

It was intended as a bridge-building exercise between the advocates of Sir Keith Joseph's monetarist policies and Mr. Heath, who has given controversial support to the Prime Minister's defence of the 5 per cent pay guideline.

But the indications last night were that there is no sign of an end to the row developing inside the party over pay policy. Criticism of Mr. Heath's support for the Government line is more hostile than ever and is likely to continue. Mr. Heath's next public speech is at a by-election rally at Berwick and East Lothian tomorrow.

Mr. Walker, in an interview on BBC radio, defended Mr. Heath's absolute right to make "factual" statements on the reality of the economic scene and said the

former leader was motivated not by malice but by a genuine sense of patriotism.

Any form of Tory support for an incomes policy is becoming deeply unpopular following the distinct swing towards a monetarist solution at the Brighton party conference. But there are some influential members of the Shadow Cabinet who believe Mrs. Thatcher acted too hastily in dismissing the need for any form of incomes policy.

Like Mr. Heath and Mr. Walker, they retain grave doubts that the operation of market forces alone in the private sector, with no Government intervention in pay negotiations, will be a success.

The theme of Mr. Walker's speech was that neither the Government's policy of a voluntary incomes policy nor the Tory policy of responsible free collective bargaining was available because of the attitude of the trade unions. Britain was therefore facing confrontation between union power and the power of Parliament.

In a conciliatory gesture, Mr. Walker stressed that the best solution was a return to responsible free collective bargaining. But as this was not on offer, governments should concentrate on bringing about a change in attitude that would make it possible in the future.

He warned that a period of tough monetary policy, operated by whichever party, could permanently diminish still further Britain's industrial base.

In addition, it was not the unions that obtained the biggest wage increases that received the largest punishment from tough monetary policies. "The innocent as well as the sinners are inflicted with unemployment, bankruptcies and liquidations."

There were signs at the week-end that some leading Tories are retreating from too hard a line on wages policy, and Mr. Angus Maude, a party deputy chairman, warned that Tories should not be drawn into making forecasts of what the party would do in office in six months time.

He told West Midlands Conservatives at Droitwich that a rigid norm simply would not work and pay rises must be flexible, based on productivity, profitability and skills. "From this we must not budge."

The CBI is due to meet Mr. Denis Healey, Chancellor of the Exchequer, on Thursday to urge him to relax the operation of pay policy and to discuss the long-term reform of pay bargaining.

Lombard, Page 12

## Vauxhall skilled workers vote for strike action

BY CHRISTIAN TYLER, LABOUR EDITOR

FIVE THOUSAND skilled workers at the traditionally militant Ellesmere Port factory of Vauxhall Motors yesterday followed 3,000 assembly workers in voting for strike action from Wednesday week if the company does not improve a pay offer.

A mass meeting of members of the Amalgamated Union of Engineering Workers at the Merseyside plant supported the national strike threat by about 2-1.

But there could be much closer decisions at mass meetings today of the 4,500 Dunstable workforce and tomorrow when 13,000 men at Luton are due to meet.

There was an anti-strike demonstration by about 300 workers at Luton last week, amid persistent claims that the plant was not in the mood for action. Union negotiators have rejected a company-wide pay rise averaging 4½ per cent, plus the promise of productivity bonuses

and are demanding that the loss-making company breach the 5 per cent limit set by the Government.

Meanwhile a breakthrough in the month-old Ford Motor strike could come today when several senior union negotiators meet the company for what are described as "exploratory talks."

This is an attempt, launched by the AUEW, to pave the way for further negotiations. Ford last offered 8 per cent—in clear breach of the Stage Four limit—and further money in return for efficient working. By that it means continuity of production, strict observance of safety and more flexible working practices.

But it has also said that a return to work by the 57,000 manual employees is a pre-condition of further bargaining.

The effects of the Ford strike are beginning to be felt in the U.S. multinational's other

European plants. Ford Nederland is putting its 1,200 production workers on short time today. Assembly workers in the van and truck factory will be down to one day a week because of lack of components from the British subsidiary.

Today's meeting will be between Mr. Ron Todd of the Transport Workers and chairman of the union side, Mr. Reg Birch of the AUEW, the secretary—who asked for the talks—and others on the national joint negotiating committee. They will see Mr. Paul Roots, the company's chief negotiator.

Union leaders at British Leyland are hoping to reach agreement very soon on the timetable for giving parity between jobs across the company. They will be meeting today, hoping to draw up proposals for acceptance by shop stewards of what is a crucial element in centralisation of the company's pay bargaining.

But by last Thursday—immediately ahead of the figures—this had fallen to 120p. Since then the share price has dropped a further 20p to stand at 100p.

The Stock Exchange said yesterday that any sharp share price movement was always monitored "as a matter of routine."

But it is far too early to say whether this particular movement will be the subject of a detailed investigation.

What concerns some observers in the City is that the share price fall appears to date from some two to three weeks ago when the group met a number of institutional shareholders who made a tour of factories as a result of a visit arranged by a firm of stockbrokers.

A number of institutions have been in touch with the group's brokers Joseph, Seabag and Grierson Grant to seek further clarification of Dunbee's position. Last year the group made £6.4m (£5.9m) pre-tax profit.

Joseph Seabag said yesterday that Dunbee had already been considering the possibility of a meeting with institutional shareholders. A number of institutions favoured the idea.

Meanwhile some people in the City have been expressing concern about the sharp fall in Dunbee's share price in the three weeks preceding the interim results.

On September 8, the group's share price stood at 153p

## Dunbee may meet shareholders

BY ANDREW TAYLOR

A TOP-LEVEL meeting is likely to take place between Dunbee's shareholders and Dunbee-Combe-Max following the toy group's £2.96m first half pre-tax loss.

The loss was revealed just three months after Lord Westwood, the Dunbee chairman, told shareholders in his annual statement that the year had begun well with a significant increase in orders, and that 1978 profits were expected to be more in keeping with the group's "past profit performance."

However, last week Lord Westwood said that as a result of problems overseas and higher interest rates, "we shall probably report lower profits in 1978 than last year."

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Reksten transferred shares and interests in "a company with a fleet of 3m tonnes deadweight" to a foreign group, without first having obtained the consent of the Bank or the Minister of Trade and Shipping.

The Bank also claimed that its inspectors had not been given access to all the papers they wished to see during their examination of the Reksten group's books at Fjosanger, near Bergen.

Mr. Reksten delayed the police inquiries by using a clause in the criminal law which says police cannot study confiscated documents without the owner's consent.

The documents had first to be studied in court, by a judge and a court witness, to be sure they were really relevant to the investigation. A police spokesman said this procedural hitch probably prolonged police inquiries by about a year.

As a direct result of the Reksten case, this clause in the criminal law is to be changed. Tax inspectors, under tax laws, have wide authority to inspect documents. The amendment to the criminal law will give concerned suspected violation of exchange control regulations, police conducting a criminal investigation and an allegation that in 1973

Continued from Page 1

## Sony

able to expose a Japanese company to some of their own pressures and problems during the confederation's private meetings.

Sony first applied for CBI membership last year and was told that it might do better first to join its trade association, the British Radio Equipment Manufacturers' Association. It was turned down by the association, which exists partly to protect and help UK companies to trade worldwide, even though foreign-owned multi-nationals, such as IIT and Philips, are among its members.

Sony then went back to the CBI and its top executives met Sir John Methven, the confederation's director general. The trade association is not itself a CBI member and so could not directly influence events, and last week Sony was admitted.

The only other Japanese-owned company already a member is Takiron Chemicals of South Wales, which makes asbestos sheeting.

Now other Japanese companies, including National Panasonic, a subsidiary of Matsushita, may also try to join.

In the meantime, the radio equipment manufacturer's association may have to revise its attitude to Japanese companies soon, because of a joint venture being set up by Rank Radio International and Toshiba,

## UK steel users reject EEC's fixed prices

BY ROY HODSON

SOME SECTORS of British industry are mounting a consumers' revolt against steel product prices fixed by the EEC Commission.

Buyers for a number of big British steel users in the automobile, consumer durables and general engineering sectors are no longer prepared to pay EEC minimum prices. They feel the price levels are no longer realistic because price cutting is widespread in Continental Europe.

The British Steel Corporation, Europe's largest single steel-maker with more than half the British market, is striving to maintain sales at the EEC minimum prices. But its position is now being seriously eroded by the influx of European steel—40 per cent up in the first half of 1978.

A head-on collision between British Steel and members of the National Association of Steel Stockholders is likely following the association's decision last week to sell steel in future on a list of recommended prices. So far members of the association have played a part in keeping prices by basing their minimum prices upon the British Steel price lists.

The stockholders' move means immediate cuts in the prices of many forms of steel imported from Europe. Imports are again rising as customers ask their steel suppliers for more of the cheaper Continental steel.

Under the proposed scheme iron and steel scrap rejected by British steel mills and iron foundries would then be freely available for sale overseas both within the EEC and to third countries.

The poor demand for scrap by British mills has left some scrap merchants with large stocks which they are not allowed to sell to third countries under present restrictions.

The disciplines governing the British steel trading market have been precarious ever since the Davignon plan was introduced. Now that they have broken down British Steel will suffer further damage to its already poor trading prospects.

The corporation's expected loss of £400m for 1978-79 may well be exceeded.

Meanwhile, the British scrap reclamation industry wants the Government to liberalise steel scrap exports by instituting a "first refusal" system in Britain for scrap metal suppliers.

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## Traded options in a tax tangle

THE LEX COLUMN

THE APPARENT view of the Board of Inland Revenue that options are not capable of being regarded as "investments" has come as a serious blow to London's young traded options market. Volume last week slipped back to the lowest level since August.

Since it opened the market has had to labour under harsh capital gains tax rules whereby individuals or institutions trading in options can easily end with a capital gains tax bill which exceeds the gains they have realised; it is even possible for CGT liabilities to arise where transactions have resulted in actual losses. But now the market faces a fresh handicap, for—applying the word of the law—the Inland Revenue has recently concluded that pension funds are not entitled to tax relief on the proceeds of the options they write. The position of charities is also in doubt.

Those in the Stock Exchange concerned with the establishment and organisation of the traded options market—the preliminary moves date back to 1974—have long been aware of some of these problems. But their strategy appears to have been to get the market started without drawing undue attention to such difficulties.

The SE may have hoped that once experienced option trading had been gained it would be possible to convince the Inland Revenue and/or the Government to make the necessary tax changes in the 1979 Finance Act. Certainly the last thing exchange officials wanted was a formal policy statement of the Inland Revenue's present position on traded options. But that is what they received at the end of last month when the Revenue took the opportunity of replying to a letter from the City chartered accountants, Spicer and Pegler.

Spicer and Pegler, which audits several member-firms of the Stock Exchange, had written to the Revenue's technical division in early May, seeking guidance on the tax position of options dealing with pension funds. The Revenue's eventual reply bore out the firm's worst fears. Yes, it said, an option to buy shares is a wasting asset—one in respect of which the tax-allowable cost depreciates during its life.

In other words, if an option with 100 days to run is bought for £70 there will be a chargeable gain of £50, which could result in a CGT liability of £15—on top of the £10 actually lost on the deal.

Only in the final part of the letter did the Revenue address itself to S & P's specific query—where it concluded that options were not capable of being regarded as "investments," and hence eligible for tax relief. The news of this ruling was enough to put pension funds off dealing, and the statement as a whole has been a general dampener on the options market since.

The last time a comparable anomaly arose in the securities markets—with quoted option warrants—changes were introduced in the 1971 Finance Act. Option dealers will be hoping for equivalent treatment this time. Their only fear is that the Inland Revenue may come down in favour of treating the whole area under the income-tax (Schedule D, Case I or VI) rules. This would mean that individuals would have to pay tax on their option gains at their marginal tax rates. But at least they would not have any liability unless they made a genuine profit.

Discreet hints are emerging from the Treasury's Dividend Section, that companies hoping to be in a position to take advantage of the new "cover rule" should take early action to establish an agreed cover history. It will, of course, be some months before companies with a December 31 or March 31 year-end are in a position to propose precise dividends. But the crucial process of agreeing a figure for the highest cover

is a horse deadweight to a company, but the statement from the Treasury for the Securities Indicators must set something of a record for unkindness. At last Friday's meeting the council emphatically and unanimously endorsed the view that it would be of advantage to have insider dealings branded as "criminal in character." Legal interpreters may be able to say why the CSI did not simply say insider dealing must be made a crime

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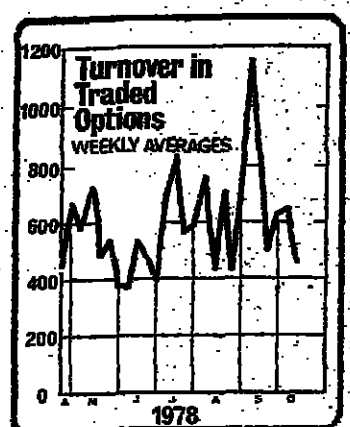
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for £70 there will be a chargeable gain of £50, which could result in a CGT liability of £15—on top of the £10 actually lost on the deal.

Only in the final part of the letter did the Revenue address itself to S & P's specific query—where it concluded that options were not capable of being regarded as "investments," and hence eligible for tax relief. The news of this ruling was enough to put pension funds off dealing, and the statement as a whole has been a general dampener on the options market since.

The last time a comparable anomaly arose in the securities markets—with quoted option warrants—changes were introduced in the 1971 Finance Act. Option dealers will be hoping for equivalent treatment this time. Their only fear is that the Inland Revenue may come down in favour of treating the whole area under the income-tax (Schedule D, Case I or VI) rules. This would mean that individuals would have to pay tax on their option gains at their marginal tax rates. But at least they would not have any liability unless they made a genuine profit.

Discreet hints are emerging from the Treasury's Dividend Section, that companies hoping to be in a position to take advantage of the new "cover rule" should take early action to establish an agreed cover history. It will, of course, be some months before companies with a December 31 or March 31 year-end are in a position to propose precise dividends. But the crucial process of agreeing a figure for the highest cover

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